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OVERALL AND BLADE-ELEMENT PERFORMANCE OF A 1.20-PRESSURE-RATIO FAN STAGE AT DESIGN BLADE SETTING ANGLE

by George W. Lewis, Jr., and Edward R. Tysl

Lewis Research Center
Cleveland, Ohio 44135

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16. Abstract

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SUMMARY

A 51-centimeter-diameter model of a short-haul fan stage was tested in the Lewis single-stage compressor research facility. This stage was designed and built on contract by the Hamilton Standard Division of United Aircraft Corporation. Surveys of the air flow conditions ahead of the rotor, between the rotor and stator, and behind the stator were made over the stable operating range of the stage. Flow and performance parameters were calculated at the blade leading and trailing edges. Surveys were taken at equivalent rotative speeds of 80, 90, 100, 110, and 120 percent of design speed.

At the design speed of 213.3 meters per second and weight flow of 31.2 kilograms per second (195.3 kg/(sec)(m^2) of annulus area), the stage pressure ratio of 1.16 was less than the design value of 1.2. Peak stage efficiency was 0.90 at 110 percent design speed, at a pressure ratio of 1.218 and at a flow rate of 30.2 kilograms per second. Maximum pressure ratio for this fan stage was 1.269 at 120 percent of design speed.

INTRODUCTION

NASA is currently engaged in investigating short-haul-type aircraft for commercial application. These aircraft must be dependable, economical, and have an efficient and reliable propulsion system which satisfies the low noise requirements for urban communities. The aircraft engines must be capable of a variety of operating conditions from takeoff, cruise, and approach to possible thrust reversal on landing.

In support of this program, the Lewis Research Center is investigating a variety of fan stages for short-haul engines. The low pressure ratio stages suitable for this application must operate at low tip speeds to attain the required low noise level. The Hamilton Standard Division of United Aircraft Corporation designed and fabricated under contract for NASA Lewis a full-scale (183-cm-diam.) fan stage and a 51-centimeter-

diameter model of the full-scale fan stage to be tested in the single-stage compressor test facility. The design and overall performance of the model stage was reported (ref. 1) at speeds of 80, 90, and 100 percent of design and for three rotor blade setting angles - design, design minus 5°, and design minus 7°. Noise characteristics for the full-scale fan are reported in reference 2. This report presents the design of the stage, and the experimental, overall, and blade-element performance for the stage at design rotor and stator blade setting angles.

Both overall and blade-element performance data are presented over the stable operating range for 80 to 120 percent of design speed. Surveys of the flow conditions were taken at nine radial positions. The tests were conducted in the single-stage compressor test facility at the Lewis Research Center.

AERODYNAMIC DESIGN

The fan stage was designed for a pressure ratio of 1.20, a rotor tip speed of 213.3 meters per second, efficiency of 0.908, and a weight flow per unit annulus area of 195.3 kilograms per second per square meter. The additional requirements for the fan stage were low noise and adjustable rotor blades. The overall design parameters for this stage which consists of rotor 55 and stator 55 (designated stage 55-55) are listed in table I. The selected flow path is presented in figure 1.

The rotor utilized double-circular-arc blade profiles. The rotor was designed with a tip solidity of 0.89 and a hub-tip radius ratio of 0.46. This resulted in 15 rotor blades with an aspect ratio of 1.43. The stator blades were designed utilizing NACA 400 Series airfoils. The constant chord stator blades had a tip solidity of 0.712 and a hub-tip radius ratio of 0.47. This resulted in 11 stator blades with an aspect ratio of 1.27.

The blade-element design parameters for this stage are presented in tables II and III, respectively. The blade geometry is given in table IV for the rotor and in table V for the stator. The blade-element design parameters shown are those supplied by the contractor. The symbols and equations are defined in appendixes A and B. The definitions and units used for the tabular data are presented in appendix C.

APPARATUS AND PROCEDURE

Compressor Test Facility

The compressor stage was tested in the Single-Stage Compressor Test Facility. A schematic diagram of the facility is shown in figure 2. Atmospheric air enters the test facility at an inlet located on the roof of the building, flows through the flow measuring

orifice and into the plenum chamber upstream of the test stage. The air then passes through the experimental compressor stage into the collector and is exhausted to the facility exhaust system.

Test Stage

A photograph of the test stage mounted in the research facility is shown in figure 3. Photographs of the rotor and stator are shown in figure 4. The 15 rotor blades were machined from a titanium alloy.

The rotor blade tips were contoured to provide adequate clearance for resetting the blades to a reverse flow position to provide reverse thrust capability. The nominal tip clearance at the rotor blade centerline was 0.06 centimeter. At the leading and trailing edges, the tip clearances were approximately 0.08 centimeter for the design setting angle. The stator blades were machined from an aluminum alloy. The stators are supported at both the hub and tip.

Instrumentation

The compressor weight flow was determined from measurements on a calibrated thin-plate orifice that was 38.9 centimeters in diameter. The orifice temperature was determined from an average of two Chromel-constantan thermocouples. Orifice pressures were measured by calibrated transducers.

Radial surveys of the flow were made upstream of the rotor, between the rotor and stator, and downstream of the stator (see fig. 1 for axial location). Photographs of the survey probes are shown in figure 5. Total pressure, total temperature, and flow angle were measured with the combination probe (fig. 5(a)) and the static pressure was measured with a 8° C-shaped wedge probe (fig. 5(b)). Each probe was positioned with a null-balancing, stream-directional sensitive control system that automatically alined the probe to the direction of flow. The thermocouple material was Chromel-constantan. Two combination probes and two wedge static probes were used at each of the three measuring stations.

Inner and outer wall static pressure taps were located at approximately the same axial stations as the survey probes. The circumferential locations of both types of survey probes along with inner and outer wall static pressure taps are shown in figure 6.

An electronic speed counter, in conjunction with a magnetic pickup, was used to measure rotative speed (rpm).

The estimated errors of the data based on inherent accuracies of the instrumentation and recording system are as follows:

Flow rate, kg/sec	±0.3
Rotative speed, rpm	±30
Flow angle, deg	±1
Temperature, K	±0.6
Rotor inlet total pressure, N/cm^2	±0.01
Rotor outlet total pressure, N/cm^2	±0.10
Stator outlet total pressure, N/cm^2	±0.10
Rotor inlet static pressure, N/cm^2	±0.04
Rotor outlet static pressure, N/cm^2	±0.07
Stator outlet static pressure, N/cm^2	±0.07

Test Procedure

The stage survey data were taken at 80, 90, 100, 110, and 120 percent of design speed. The data, at each speed line, were taken over a range of weight flow from maximum flow to the near-stall conditions. Data were recorded at nine radial positions for each speed and weight flow.

At each radial position the two combination probes behind the stator were circumferentially traversed to nine different locations across the stator gap. The wedge probes were set at midgap because previous studies showed that the static pressure across the stator gap was constant. Values of total pressure, temperature, and flow angle were recorded at each circumferential position. At the last circumferential position values of pressure, temperature, and flow angle were also recorded at stations 1 and 2. All probes were then traversed to the next radial position and the circumferential traverse procedure repeated.

At each speed the back pressure on the stage was increased by closing the sleeve valve in the collector until a stalled condition was detected by a sudden drop in stage outlet total pressure. This pressure was measured by a probe located at midpassage downstream of stators and was recorded on an X-Y plotter. Stall was corroborated by large increases in the measured blade stresses on the rotor with a sudden increase in audible noise level.

Calculation Procedure

Measured total temperatures and total pressures were corrected for Mach number and design streamline slope. These corrections were based on instrument probe calibrations given in reference 2. The stream static pressure was corrected for Mach number and streamline slope based on an average calibration for the type of probe used.

Due to the physical construction of the C-shaped static pressure wedges, it was not possible to obtain static pressure measurements at 5, 10, and 95 percent of span from the rotor tip. The static pressure at 95 percent span was obtained by assuming a linear variation in static pressure between the values at the inner wall and the probe measurement at 90 percent span. A similar variation was assumed between the static pressure measurements at the outer wall and the 15 percent span to obtain the static pressure at 5 and 10 percent span.

At each radial position, averaged values of the nine circumferential measurements of pressure, temperature rise, and flow angle downstream of the stator (station 3) were obtained. The nine values of total temperature were mass-averaged to obtain the stage total temperature rise. The nine values of total pressure were energy averaged. The measured values of pressure, temperature, and flow angle were used to calculate axial and tangential velocities at each circumferential position. The flow angles presented for each radial position are calculated based on these mass-averaged axial and tangential velocities. To obtain the overall performance, the radial values of total temperature were mass-averaged and the values of total pressure were energy-averaged. At each measuring station, the integrated weight flow was computed based on the radial survey data.

The data, measured at the three measuring stations, have been translated to planes approximating the blade leading and trailing edges by the method presented in reference 3.

The weight flow at stall was obtained in the following manner: during operation of the near stall condition, the collector valve was slowly closed in small increments. At each increment the weight flow was obtained. The weight flow obtained just before stall occurred is called the stall weight flow. The pressure ratio at stall was obtained by extrapolating the total pressure obtained from the survey data to the stall weight flow.

Orifice weight flow, total pressures, static pressures, and temperatures were all corrected to sea-level conditions based on the rotor inlet conditions.

RESULTS AND DISCUSSION

The results from this investigation are presented in three main sections. The overall performance for the rotor and the stage are presented first. Radial distributions of several performance parameters are then presented for both the rotor and the stator. Blade-element data are presented for both rotor and stator. The data are computer plotted, and occasionally a data point is omitted when it falls outside the range of the parameters shown in the figure.

All the plotted data together with some additional performance parameters for the fan stage are presented in tabular form. The overall performance data are presented in table VI. The blade-element data are presented first for the rotor in table VII and then

for the stator in table VIII. The definitions and units used for the tabular data are presented in appendix C.

Overall Performance

The overall performance for rotor 55 and stage 55-55 are presented in figures 7 and 8, respectively. For both of these computer-plotted figures, data are presented for five speeds from 80 to 120 percent of design speed. Design-point values are shown as solid symbols on both figures.

The stall points for each speed line were established by extrapolating the overall performance curves to the stall weight flow value recorded with the on-site computer. The stall lines (dashed lines) shown in figure 8 were then established by fairing a curve through the stall points associated with each speed line.

The design speed peak efficiency, of 0.87 for the stage, occurred at a measured equivalent weight flow of 26.7 kilograms per second (167 kg/sec/m^2 of annulus area) and pressure ratio of 1.177 as compared to the design weight flow of 31.2 kilograms per second (213 kg/sec/m^2 of annulus area) and pressure ratio of 1.196. At 110 percent speed, the peak efficiency of 0.90 occurred near design weight flow; the pressure ratio of 1.218 exceeded design.

The rotor efficiency (fig. 7) of 0.92 occurred at an equivalent weight flow of 30.0 kilograms per second at design speed and decreased from 0.94 at 80 percent speed to 0.88 at 120 percent speed while the stage efficiency peaked at 110 percent speed. The maximum stage pressure ratio of 1.269 was obtained at 120 percent of design speed.

At design speed, the stall margin for the stage was 18 percent. The stall margin, defined in appendix B, was based on the equivalent weight flow and pressure ratio at which peak efficiency occurred, as compared to the values just prior to stall.

Radial Distributions

The radial distributions of selected flow and performance parameters for both rotor and stator are shown in figures 9 and 10. The results are presented for three flow rates at design speed. The data shown represent the flow conditions at near stall, peak efficiency, and near choke. The performance at peak efficiency is compared to design even though peak efficiency occurred at a considerably lower weight flow (26.7 as compared to 31.2 kg/sec).

Rotor. - The measured and design energy input at peak efficiency agree at all span locations except near the hub (90 and 95 percent span) where a small dropoff in measured temperature ratio is noted. The measured total pressure ratio was less than design from

the rotor tip to 70 percent span and compares with design from 70 percent span to the hub. The deviation angles are higher than design from the tip to 70 percent span and slightly lower from 70 percent span to the hub. The loading as indicated by the D-factor was slightly higher or equal to design values across the blade span. Losses are somewhat greater than design values at all span locations except at the 70 and 95 percent stations where losses are equal to the design values.

Stator. - The total loss coefficient for the stator at peak efficiency was higher than design from the blade tip to about 80 percent span; from 80 percent span to the hub, the measured losses were lower than design. The stator blade loading (D-factor) had a similar distribution and was higher than design from the blade tip to 70 percent span and lower from 70 percent span to the hub.

Variations of Blade-Element Performance with Incidence Angle

The variations of selected blade-element performance parameters with incidence angle are shown in figure 11 for the rotor and in figure 12 for the stator. The data are presented for 80, 100, and 120 percent of speed at blade elements on streamlines located at 5, 10, 30, 50, 70, 90, and 95 percent of blade span as measured from the rotor-outlet blade tip. Design values are indicated by solid symbols.

Rotor. - At the three outer span locations (5, 10, and 30 percent span) the minimum loss with incidence angle is shown and at design speed corresponds to the design incidence angle. At the radial stations closer to the hub (50 to 95 percent span) losses continue to decrease with increasing incidence angle; however, at design incidence, the measured loss is somewhat greater than design. At design incidence angle both the work input (temperature ratio) and the pressure ratio are consistently less than design value. There is a marked increase in loss in the rotor tip region for 120 percent speed. The relative inlet Mach numbers are approaching unity at this speed (table VII) and apparently local shock patterns on the blade surfaces cause these higher losses.

Stator. - Minimum loss values were defined for this stator from the tip down to the 50 percent span location (fig. 12). At all elements except 90 and 95 percent spans, the measured losses were greater than the design values at design incidence. The loss curves indicate that the minimum loss value occurred at incidence angles about 8° higher than the design value at the 5 and 10 percent span locations. Minimum loss-incidence and design loss-incidence coincide at the 30 and 50 percent spans. At the 70, 90, and 95 percent span locations, the minimum loss-incidence was not established.

SUMMARY OF RESULTS

This report presents the aerodynamic design and both the overall and blade-element performance of a 51-centimeter-diameter fan stage compressor model of a 183-centimeter fan. This stage is one of a series of low-tip-speed - high-flow research fan stages presently being investigated for both aerodynamic design and noise generation. The stage has a design equivalent weight flow of 31.2 kilograms (195.3 kg/m^2 of annulus area) at a rotor blade tip speed of 213 meters per second. Radial surveys of the flow conditions at the rotor inlet, rotor outlet, and stator outlet were made over the stable operating flow range of the stage at equivalent rotative speeds from 80 to 120 percent design speed. Flow and performance parameters were calculated across a number of selected blade elements. The following principal results were obtained:

1. The fan stage peak efficiency of 0.87 occurred at an equivalent weight flow of 26.7 kilograms per second at a design speed of 213 meters per second and a pressure ratio of 1.177. Design values are 0.90, 31.2, and 1.196, respectively. Rotor peak efficiency occurred at an equivalent weight flow of 30.0 kilograms per second. Peak efficiency of 0.90 for the stage was obtained at 110 percent speed, a pressure ratio of 1.218, and weight flow of 30.2 kilograms per second.

2. Maximum stage pressure ratio of 1.290 was obtained at 120 percent speed and flow of 29.4 kilograms per second.

3. The stall margin for this fan stage is 18 percent at design speed.

4. Radial distributions of rotor blade-element performance parameters at design speed and peak efficiency flow condition indicate somewhat higher than design losses and lower than design pressure ratios at design energy input levels. Stator blade losses and loading were also higher than design from the blade tip to 70 percent span.

Lewis Research Center,
National Aeronautics and Space Administration,
Cleveland, Ohio, May 30, 1974,
501-24.

APPENDIX A

SYMBOLS

A_{an} annulus area at rotor leading edge, 0.160 m^2

A_f frontal area at rotor leading edge, 0.203 m^2

C_p specific heat at constant pressure, 1004 J/(kg)(K)

c aerodynamic chord, cm

D diffusion factor

i_{mc} mean incidence angle, angle between inlet air direction and line tangent to blade mean camber line at leading edge, deg

N rotative speed, rpm

P total pressure, N/cm^2

p static pressure, N/cm^2

r radius, cm

SM stall margin

T total temperature, K

U wheel speed, m/sec

V air velocity, m/sec

W weight flow, kg/sec

Z axial distance references from rotor blade hub leading edge, cm

α_c cone angle, deg

α_s slope of streamline, deg

β air angle, angle between air velocity and axial direction, deg

β'_c relative meridional air angle based on cone angle, arctan (tan β'_m cos α_c/cos α_s), deg

γ ratio of specific heats (1.40)

δ ratio of rotor inlet total pressure to standard pressure of 10.13 N/m^2

δ^o deviation angle, angle between exit air direction and tangent to blade mean camber line at trailing edge, deg

θ ratio of rotor inlet total temperature to standard temperature of 288.2 K

η efficiency

κ_{mc} angle between the blade mean camber line and the meridional plane, deg

σ solidity, ratio of chord to spacing

$\bar{\omega}$ total loss coefficient

$\bar{\omega}_p$ profile loss coefficient

$\bar{\omega}_s$ shock loss coefficient

Subscripts:

ad adiabatic (temperature rise)

id ideal

LE blade leading edge

m meridional direction

mom momentum rise

p polytropic

TE blade trailing edge

z axial direction

θ tangential direction

1 instrumentation plane upstream of rotor

2 instrumentation plane between rotor and stator

3 instrumentation plane downstream of stator

Superscript:

' relative to blade

APPENDIX B

EQUATIONS

Performance parameters are defined as follows:

Mean incidence angle

$$i_{mc} = (\beta_c')_{LE} - (\kappa_{mc})_{LE} \tag{B1}$$

Deviation angle

$$\delta^o = (\beta_c')_{TE} - (\kappa_{mc})_{TE} \tag{B2}$$

Diffusion factor

$$D = 1 - \frac{V'_{TE}}{V'_{LE}} + \left| \frac{(rV_\theta)_{TE} - (rV_\theta)_{LE}}{(r_{TE} + r_{LE})\sigma (V'_{LE})} \right| \tag{B3}$$

Total loss coefficient

$$\bar{\omega} = \frac{(P'_{id})_{TE} - (P')_{TE}}{(P')_{LE} - (p)_{LE}} \tag{B4}$$

Profile loss coefficient

$$\bar{\omega}_p = \bar{\omega} - \bar{\omega}_s \tag{B5}$$

Total loss parameter

$$\frac{\bar{\omega} \cos (\beta'_m)_{TE}}{2\sigma} \tag{B6}$$

Profile loss parameter

$$\frac{\bar{\omega}_p \cos (\beta'_m)_{TE}}{2\sigma} \tag{B7}$$

Adiabatic (temperature-rise) efficiency

$$\eta_{ad} = \frac{\left(\frac{P_{TE}}{P_{LE}}\right)^{(\gamma-1)/\gamma} - 1}{\frac{T_{TE}}{T_{LE}} - 1} \tag{B8}$$

Momentum-rise efficiency

$$\eta_{mom} = \frac{\left(\frac{P_{TE}}{P_{LE}}\right)^{(\gamma-1)/\gamma} - 1}{\frac{(UV_\theta)_{TE} - (UV_\theta)_{LE}}{T_{LE} g J C_p}} \tag{B9}$$

Equivalent weight flow

$$\frac{W\sqrt{\theta}}{\delta} \tag{B10}$$

Equivalent rotative speed

$$\frac{N}{\sqrt{\theta}} \tag{B11}$$

Weight flow per unit annulus area

$$\frac{\left(\frac{W\sqrt{\theta}}{\delta}\right)}{A_{an}} \tag{B12}$$

Weight flow per unit frontal area

$$\frac{\left(\frac{W\sqrt{\theta}}{\delta}\right)}{A_f} \tag{B13}$$

Head-rise coefficient

$$\frac{C_p T_{LE}}{U_{tip}^2}\left[\left(\frac{P_{TE}}{P_{LE}}\right)^{(\gamma-1)/\gamma} - 1\right] \tag{B14}$$

Flow coefficient

$$\left(\frac{V_z}{U_{tip}}\right)_{LE} \tag{B15}$$

Stall margin

$$SM = \left[\frac{\left(\frac{P_{TE}}{P_{LE}}\right)_{stall}}{\left(\frac{P_{TE}}{P_{LE}}\right)_{ref}} \times \frac{\left(\frac{W\sqrt{\theta}}{\delta}\right)_{ref}}{\left(\frac{W\sqrt{\theta}}{\delta}\right)_{stall}} - 1\right] 100 \tag{B16}$$

Polytropic efficiency

$$\eta_p = \frac{\ln\left(\frac{P_{TE}}{P_{LE}}\right)^{(\gamma-1)/\gamma}}{\ln\left(\frac{T_{TE}}{T_{LE}}\right)} \tag{B17}$$

APPENDIX C

DEFINITIONS AND UNITS USED IN TABLES

ABS	absolute
AERO CHORD	straight line between blade leading and trailing edges along design streamline, cm
AREA RATIO	ratio of actual flow area to critical area (where local Mach number is one)
BETAM	meridional air angle, deg
CONE ANGLE	angle between axial direction and conical surface representing blade element, deg
DEV	deviation angle (defined by eq. (B2)), deg
D-FACT	diffusion factor (defined by eq. (B3))
EFF	adiabatic efficiency (defined by eq. (B8))
IN	inlet (leading edge of blade)
INCIDENCE	incidence angle (mean defined by eq. (B1)), deg
KIC	angle between the blade mean camber line at the leading edge and the meridional plane, deg
KOC	angle between the blade mean camber line at the trailing edge and the meridional plane, deg
KTC	angle between the blade mean camber line at the transition point and the meridional plane, deg
LOSS COEFF	loss coefficient (total defined by eq. (B4) and profile defined by eq. (B5))
LOSS PARAM	loss parameter (total defined by eq. (B6) and profile defined by eq. (B7))
MERID	meridional
MERID VEL R	meridional velocity ratio
OUT	outlet (trailing edge of blade)

PERCENT SPAN	percent of blade span from tip at rotor outlet
PHISS	suction surface camber ahead of assumed shock location, deg
PRESS	pressure, N/cm^2
PROF	profile
RADII	radius, cm
REL	relative to the blade
RI	inlet radius (leading edge of blade), cm
RO	outlet radius (trailing edge of blade), cm
RP	radial position
RPM	equivalent rotative speed, rpm
SETTING ANGLE	angle between aerodynamic chord and meridional plane, deg
SOLIDITY	ratio of aerodynamic chord to blade spacing
SPEED	speed, m/sec
STREAMLINE SLOPE	slope of streamline, deg
TANG	tangential
TEMP	temperature, K
TI	thickness of blade at leading edge, cm
TM	thickness of blade at maximum thickness, cm
TO	thickness of blade at trailing edge, cm
TOT	total
TOTAL CAMBER	difference between inlet and outlet blade mean camber lines, deg
VEL	velocity, m/sec
WT FLOW	equivalent weight flow, kg/sec
X FACTOR	ratio of suction surface camber ahead of assumed shock location of a multiple circular arc blade section to that of a double circular arc blade section
ZIC	axial distance to blade leading edge from inlet, cm
ZMC	axial distance to blade maximum thickness point from inlet, cm
ZOC	axial distance to blade trailing edge from inlet, cm
ZTC	axial distance to transition point from inlet, cm

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TABLE I. - DESIGN OVERALL PARAMETERS

FOR STAGE 55-55

ROTOR TOTAL PRESSURE RATIO.....	1.205
STAGE TOTAL PRESSURE RATIO	1.196
ROTOR TOTAL TEMPERATURE RATIO.....	1.058
STAGE TOTAL TEMPERATURE RATIO	1.058
ROTOR ADIABATIC EFFICIENCY.....	0.940
STAGE ADIABATIC EFFICIENCY	0.903
ROTOR POLYTROPIC EFFICIENCY.....	0.941
STAGE POLYTROPIC EFFICIENCY	0.906
ROTOR HEAD RISE COEFFICIENT.....	0.348
STAGE HEAD RISE COEFFICIENT	0.334
FLOW COEFFICIENT.....	0.861
WT FLOW PER UNIT FRONTAL AREA	153.970
WT FLOW PER UNIT ANNULUS AREA.....	195.295
WT FLOW	31.207
RPM.....	8020.000
TIP SPEED	213.323

TABLE II. - DESIGN BLADE-ELEMENT PARAMETERS FOR ROTOR 55

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
TIP	25.400	25.400	0.	27.6	48.4	38.1	288.2	1.063	10.14	1.213
1	24.730	24.714	0.	28.8	47.8	34.9	288.2	1.065	10.14	1.226
2	24.026	24.028	-0.	29.7	47.2	32.1	288.2	1.067	10.14	1.235
3	23.323	23.343	-0.	30.4	46.5	29.7	288.2	1.067	10.14	1.238
4	21.172	21.285	-0.	31.6	44.1	24.1	288.2	1.064	10.14	1.231
5	18.320	18.542	-0.	32.9	40.2	16.6	288.2	1.057	10.14	1.208
6	15.539	15.799	-0.	34.7	35.7	7.9	288.2	1.051	10.14	1.178
7	13.541	13.741	-0.	36.1	32.0	1.4	288.2	1.044	10.14	1.144
8	12.907	13.056	-0.	36.6	30.7	-0.7	288.2	1.042	10.14	1.130
9	12.288	12.370	-0.	37.1	29.4	-2.8	288.2	1.040	10.14	1.115
HUB	11.684	11.684	0.	37.6	28.1	-4.8	288.2	1.037	10.14	1.098

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
TIP	189.4	184.1	285.3	207.3	189.4	163.1	0.	85.3	213.3	213.3
1	188.1	190.0	280.2	203.0	188.1	166.5	0.	91.5	207.7	207.6
2	186.9	194.1	275.0	198.9	186.9	168.6	-0.	96.2	201.8	201.8
3	185.9	196.3	270.1	194.9	185.9	169.3	-0.	99.4	195.9	196.0
4	183.6	197.6	255.6	184.4	183.6	168.3	-0.	103.6	177.8	178.8
5	181.8	196.3	238.2	172.0	181.8	164.8	-0.	106.6	153.9	155.7
6	181.3	194.5	223.4	161.4	181.3	159.9	-0.	110.6	130.5	132.7
7	182.0	189.8	214.7	153.5	182.0	153.5	-0.	111.7	113.7	115.4
8	182.6	187.2	212.3	150.4	182.6	150.4	-0.	111.5	108.4	109.6
9	183.2	184.1	210.3	147.0	183.2	146.9	-0.	111.0	103.2	103.9
HUB	183.9	180.4	208.5	143.4	183.9	142.9	0.	110.2	98.1	98.1

	ABS MACH NO		REL MACH NO		MERID MACH NO		STREAMLINE SLOPE		MERID
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	VEL R
TIP	0.575	0.540	0.865	0.608	0.575	0.478	0.78	0.46	0.861
1	0.570	0.557	0.850	0.595	0.570	0.488	0.66	0.55	0.885
2	0.567	0.570	0.834	0.584	0.567	0.495	0.61	0.66	0.902
3	0.563	0.577	0.818	0.573	0.563	0.497	0.62	0.79	0.911
4	0.556	0.582	0.774	0.543	0.556	0.496	0.85	1.14	0.917
5	0.550	0.579	0.721	0.508	0.550	0.487	1.26	1.43	0.907
6	0.549	0.576	0.676	0.478	0.549	0.473	1.39	1.40	0.882
7	0.551	0.563	0.650	0.455	0.551	0.455	1.04	0.98	0.843
8	0.553	0.555	0.643	0.446	0.553	0.446	0.78	0.71	0.824
9	0.555	0.546	0.637	0.436	0.555	0.436	0.44	0.37	0.802
HUB	0.557	0.535	0.631	0.425	0.557	0.424	0.05	-0.03	0.777

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
TIP	0.	-2.0	6.1	0.441	0.903	0.051	0.051	0.023	0.023
1	5.00	-2.4	7.2	0.458	0.917	0.047	0.047	0.022	0.022
2	10.00	-2.9	8.0	0.470	0.928	0.043	0.043	0.020	0.020
3	15.00	-3.2	8.5	0.479	0.936	0.039	0.039	0.019	0.019
4	30.00	-3.6	10.5	0.493	0.958	0.027	0.027	0.013	0.013
5	50.00	-3.7	12.2	0.503	0.970	0.019	0.019	0.009	0.009
6	70.00	-3.9	12.6	0.512	0.949	0.032	0.032	0.015	0.015
7	85.00	-2.4	12.4	0.517	0.884	0.070	0.070	0.031	0.031
8	90.00	-1.7	12.3	0.520	0.844	0.090	0.090	0.039	0.039
9	95.00	-0.9	12.2	0.524	0.792	0.116	0.116	0.049	0.049
HUB	100.00	0.0	12.0	0.529	0.724	0.145	0.145	0.059	0.059

TABLE III. - DESIGN BLADE-ELEMENT PARAMETERS FOR STATOR 55

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
TIP	25.938	25.938	27.9	-0.	27.9	-0.	306.2	1.000	12.29	0.992
1	25.231	25.299	28.9	0.	28.9	0.	307.0	1.000	12.43	0.992
2	24.547	24.672	29.7	-0.	29.7	-0.	307.5	1.000	12.51	0.993
3	23.877	24.048	30.3	-0.	30.3	-0.	307.5	1.000	12.55	0.994
4	21.847	22.222	31.2	-0.	31.2	-0.	306.6	1.000	12.48	0.997
5	19.166	19.826	32.3	-0.	32.3	-0.	304.7	1.000	12.24	0.996
6	16.502	17.464	34.0	-0.	34.0	-0.	302.7	1.000	11.94	0.991
7	14.518	15.682	35.4	-0.	35.4	-0.	301.0	1.000	11.60	0.985
8	13.859	15.069	35.9	-0.	35.9	-0.	300.3	1.000	11.45	0.982
9	13.202	14.447	36.4	-0.	36.4	-0.	299.6	1.000	11.30	0.979
HUB	12.548	13.818	36.9	0.	36.9	0.	298.9	1.000	11.13	0.976

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
TIP	178.6	169.2	178.6	169.2	157.9	169.2	.83.5	-0.	0.	0.
1	185.4	175.1	185.4	175.1	162.3	175.1	89.6	0.	0.	0.
2	190.0	178.9	190.0	178.9	165.1	178.9	94.1	-0.	0.	0.
3	192.7	180.8	192.7	180.8	166.5	180.8	97.2	-0.	0.	0.
4	194.8	179.9	194.8	179.9	166.7	179.9	100.9	-0.	0.	0.
5	193.0	172.7	193.0	172.7	163.1	172.7	103.1	-0.	0.	0.
6	189.3	160.6	189.3	160.6	156.9	160.6	105.9	-0.	0.	0.
7	182.6	143.7	182.6	143.7	148.9	143.7	105.8	-0.	0.	0.
8	179.3	135.4	179.3	135.4	145.3	135.4	105.0	-0.	0.	0.
9	175.3	125.7	175.3	125.7	141.2	125.7	104.0	-0.	0.	0.
HUB	170.9	114.6	170.9	114.6	136.6	114.6	102.6	0.	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		STREAMLINE SLOPE		MERID
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	VEL R
TIP	0.523	0.494	0.523	0.494	0.462	0.494	0.63	-0.10	1.071
1	0.543	0.511	0.543	0.511	0.475	0.511	0.86	0.05	1.079
2	0.557	0.523	0.557	0.523	0.484	0.523	1.10	0.22	1.084
3	0.566	0.528	0.566	0.528	0.488	0.528	1.34	0.39	1.086
4	0.573	0.526	0.573	0.526	0.490	0.526	2.08	0.95	1.079
5	0.569	0.506	0.569	0.506	0.481	0.506	3.13	1.72	1.058
6	0.559	0.471	0.559	0.471	0.464	0.471	4.25	2.42	1.024
7	0.540	0.420	0.540	0.420	0.440	0.420	5.10	2.77	0.965
8	0.530	0.396	0.530	0.396	0.430	0.396	5.35	2.76	0.932
9	0.519	0.367	0.519	0.367	0.418	0.367	5.58	2.68	0.890
HUB	0.505	0.334	0.505	0.334	0.404	0.334	5.80	2.54	0.839

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
TIP	0.	-12.5	16.0	0.380	0.	0.049	0.049	0.034	0.034
1	5.00	-11.6	15.6	0.385	0.	0.042	0.042	0.029	0.029
2	10.00	-10.9	15.3	0.386	0.	0.036	0.036	0.024	0.024
3	15.00	-10.3	15.0	0.387	0.	0.030	0.030	0.019	0.019
4	30.00	-9.8	14.0	0.382	0.	0.017	0.017	0.010	0.010
5	50.00	-9.1	13.0	0.382	0.	0.018	0.018	0.010	0.010
6	70.00	-7.8	11.7	0.400	0.	0.046	0.046	0.021	0.021
7	85.00	-6.8	10.9	0.440	0.	0.086	0.086	0.035	0.035
8	90.00	-6.4	10.7	0.464	0.	0.103	0.103	0.040	0.040
9	95.00	-6.0	10.4	0.494	0.	0.123	0.123	0.046	0.046
HUB	100.00	-5.6	10.1	0.533	0.	0.147	0.147	0.052	0.052

TABLE IV. - BLADE GEOMETRY FOR ROTOR 55

RP	PERCENT SPAN	RADII RI	RADII RO	BLADE ANGLES KIC	BLADE ANGLES KTC	BLADE ANGLES KOC	DELTA INC	CONE ANGLE
TIP	0.	25.400	25.400	50.40	41.08	32.00	0.	0.057
1	5.	24.730	24.714	50.29	38.96	27.64	0.	-0.124
2	10.	24.026	24.028	50.05	37.05	24.05	-0.	0.057
3	15.	23.323	23.343	49.67	35.44	21.21	-0.	0.152
4	30.	21.172	21.285	47.72	30.64	13.56	-0.	0.892
5	50.	18.320	18.542	43.95	24.18	4.41	-0.	1.806
6	70.	15.539	15.799	39.62	17.42	-4.79	-0.	2.239
7	85.	13.541	13.741	34.40	11.69	-11.02	-0.	1.813
8	90.	12.907	13.056	32.39	9.69	-13.01	-0.	1.375
9	95.	12.288	12.370	30.27	7.66	-14.95	-0.	0.769
HUB	100.	11.684	11.684	28.06	5.61	-16.84	0.	0.057

RP	BLADE THICKNESSES TI	TM	TO	AXIAL DIMENSIONS ZI	ZMC	ZTC	ZO
TIP	0.019	0.239	0.019	-0.636	2.690	2.690	6.522
1	0.025	0.264	0.025	-0.671	2.650	2.650	6.546
2	0.031	0.293	0.031	-0.685	2.639	2.639	6.588
3	0.036	0.326	0.036	-0.680	2.658	2.658	6.644
4	0.050	0.441	0.050	-0.659	2.648	2.648	6.597
5	0.063	0.591	0.063	-0.572	2.669	2.669	6.455
6	0.083	0.741	0.083	-0.371	2.753	2.753	6.284
7	0.091	0.839	0.091	-0.206	2.824	2.824	6.116
8	0.090	0.862	0.090	-0.142	2.852	2.852	6.057
9	0.088	0.881	0.088	-0.073	2.881	2.881	5.998
HUB	0.084	0.896	0.084	0.	2.912	2.912	5.938

RP	AERO CHORD	SETTING ANGLE	TOTAL CAMBER	SOLIDITY	X FACTOR	PHISS	AREA RATIO
TIP	9.499	41.14	18.40	0.893	1.000	0.	0.
1	9.274	38.96	22.65	0.896	1.000	0.	0.
2	9.105	37.05	26.00	0.905	1.000	-0.	-0.
3	8.980	35.44	28.47	0.919	1.000	-0.	-0.
4	8.428	30.66	34.15	0.948	1.000	-0.	-0.
5	7.703	24.22	39.54	0.998	1.000	-0.	-0.
6	6.978	17.48	44.41	1.063	1.000	-0.	-0.
7	6.458	11.74	45.42	1.130	1.000	-0.	-0.
8	6.290	9.73	45.40	1.157	1.000	-0.	-0.
9	6.126	7.69	45.22	1.186	1.000	-0.	-0.
HUB	5.966	5.61	44.89	1.219	1.000	0.	0.

TABLE V. - BLADE GEOMETRY FOR STATOR 55

RP	PERCENT SPAN	RADII RI	RADII RO	BLADE ANGLES KIC	BLADE ANGLES KTC	BLADE ANGLES KOC	DELTA INC	CONE ANGLE
TIP	0.	25.938	25.938	40.40	17.86	-16.01	-0.	0.057
1	5.	25.231	25.299	40.47	18.05	-15.65	0.	0.378
2	10.	24.547	24.672	40.54	18.23	-15.31	-0.	0.693
3	15.	23.877	24.048	40.61	18.40	-14.98	-0.	0.952
4	30.	21.847	22.222	41.00	19.02	-14.04	-0.	2.087
5	50.	19.166	19.826	41.42	19.69	-13.02	-0.	3.692
6	70.	16.502	17.464	41.78	20.44	-11.73	-0.	5.406
7	85.	14.518	15.682	42.13	20.97	-10.93	-0.	6.564
8	90.	13.859	15.069	42.23	21.15	-10.66	-0.	6.832
9	95.	13.202	14.447	42.32	21.32	-10.38	-0.	7.039
HUB	100.	12.548	13.818	42.40	21.48	-10.10	0.	7.185

RP	BLADE THICKNESSES TI	BLADE THICKNESSES TM	BLADE THICKNESSES TO	AXIAL DIMENSIONS ZI	AXIAL DIMENSIONS ZMC	AXIAL DIMENSIONS ZTC	AXIAL DIMENSIONS ZO
TIP	0.188	0.953	0.087	21.634	25.502	25.502	31.982
1	0.188	0.953	0.087	21.628	25.489	25.489	31.967
2	0.188	0.953	0.087	21.631	25.486	25.486	31.961
3	0.188	0.953	0.087	21.642	25.490	25.490	31.963
4	0.188	0.953	0.087	21.650	25.473	25.473	31.937
5	0.188	0.953	0.087	21.662	25.453	25.453	31.899
6	0.188	0.953	0.087	21.673	25.426	25.426	31.844
7	0.188	0.953	0.087	21.681	25.404	25.404	31.800
8	0.188	0.953	0.087	21.684	25.398	25.398	31.787
9	0.188	0.953	0.087	21.686	25.392	25.392	31.775
HUB	0.188	0.953	0.087	21.689	25.387	25.387	31.764

RP	AERO CHORD	SETTING ANGLE	TOTAL CAMBER	SOLIDITY	X FACTOR	PHISS	AREA RATIO
TIP	10.584	11.92	56.40	0.714	1.000	-0.	-0.
1	10.584	12.15	56.12	0.733	1.000	0.	0.
2	10.584	12.36	55.85	0.753	1.000	-0.	-0.
3	10.584	12.57	55.59	0.773	1.000	-0.	-0.
4	10.584	13.28	55.04	0.841	1.000	-0.	-0.
5	10.585	14.07	54.44	0.951	1.000	-0.	-0.
6	10.586	15.00	53.51	1.091	1.000	-0.	-0.
7	10.588	15.67	53.06	1.228	1.000	-0.	-0.
8	10.588	15.88	52.88	1.282	1.000	-0.	-0.
9	10.589	16.09	52.69	1.341	1.000	-0.	-0.
HUB	10.589	16.30	52.50	1.406	1.000	0.	0.

TABLE VI. - OVERALL PERFORMANCE FOR STAGE 55-55

(a) 80 Percent design speed

Parameter	Reading			
	1606	1600	1598	1597
ROTOR TOTAL PRESSURE RATIO	1.093	1.112	1.116	1.117
STAGE TOTAL PRESSURE RATIO	1.071	1.104	1.110	1.108
ROTOR TOTAL TEMPERATURE RATIO	1.030	1.033	1.035	1.037
STAGE TOTAL TEMPERATURE RATIO	1.029	1.032	1.035	1.036
ROTOR TEMP. RISE EFFICIENCY	0.869	0.943	0.905	0.870
STAGE TEMP. RISE EFFICIENCY	0.683	0.888	0.869	0.821
ROTOR MOMENTUM RISE EFFICIENCY	0.864	0.996	0.881	0.829
ROTOR HEAD RISE COEFFICIENT	0.255	0.319	0.329	0.333
STAGE HEAD RISE COEFFICIENT	0.195	0.297	0.312	0.309
FLOW COEFFICIENT	1.071	0.834	0.650	0.574
WT FLOW PER UNIT FRONTAL AREA	150.66	122.10	98.63	87.96
WT FLOW PER UNIT ANNULUS AREA	191.10	154.88	125.11	111.57
WT FLOW AT ORIFICE	30.54	24.75	19.99	17.83
WT FLOW AT ROTOR INLET	31.04	25.19	20.34	18.14
WT FLOW AT ROTOR OUTLET	31.81	26.09	20.78	18.51
WT FLOW AT STATOR OUTLET	31.88	26.34	21.86	20.55
ROTATIVE SPEED	6436.3	6287.0	6293.3	6283.1
PERCENT OF DESIGN SPEED	80.3	78.4	78.5	78.3

(b) 90 Percent design speed

Parameter	Reading				
	1604	1596	1595	1594	1588
ROTOR TOTAL PRESSURE RATIO	1.122	1.142	1.149	1.151	1.154
STAGE TOTAL PRESSURE RATIO	1.097	1.132	1.140	1.144	1.143
ROTOR TOTAL TEMPERATURE RATIO	1.040	1.042	1.044	1.045	1.048
STAGE TOTAL TEMPERATURE RATIO	1.039	1.041	1.043	1.044	1.047
ROTOR TEMP. RISE EFFICIENCY	0.845	0.932	0.919	0.903	0.869
STAGE TEMP. RISE EFFICIENCY	0.693	0.888	0.887	0.880	0.835
ROTOR MOMENTUM RISE EFFICIENCY	0.851	0.921	0.910	0.881	0.848
ROTOR HEAD RISE COEFFICIENT	0.261	0.311	0.324	0.328	0.335
STAGE HEAD RISE COEFFICIENT	0.209	0.290	0.305	0.313	0.313
FLOW COEFFICIENT	1.021	0.832	0.733	0.665	0.609
WT FLOW PER UNIT FRONTAL AREA	157.81	135.03	121.72	112.23	104.02
WT FLOW PER UNIT ANNULUS AREA	200.17	171.27	154.39	142.36	131.94
WT FLOW AT ORIFICE	31.99	27.37	24.67	22.75	21.08
WT FLOW AT ROTOR INLET	32.51	27.86	25.18	23.19	21.47
WT FLOW AT ROTOR OUTLET	33.46	28.42	25.79	23.69	21.85
WT FLOW AT STATOR OUTLET	33.60	29.03	26.68	25.01	23.82
ROTATIVE SPEED	7234.0	7141.1	7146.6	7151.6	7136.9
PERCENT OF DESIGN SPEED	90.2	89.0	89.1	89.2	89.0

(c) 100 Percent design speed

Parameter	Reading				
	1603	1611	1613	1614	1592
ROTOR TOTAL PRESSURE RATIO	1.162	1.185	1.191	1.195	1.193
STAGE TOTAL PRESSURE RATIO	1.143	1.164	1.177	1.184	1.175
ROTOR TOTAL TEMPERATURE RATIO	1.050	1.054	1.056	1.059	1.060
STAGE TOTAL TEMPERATURE RATIO	1.049	1.052	1.055	1.057	1.058
ROTOR TEMP. RISE EFFICIENCY	0.874	0.918	0.907	0.887	0.864
STAGE TEMP. RISE EFFICIENCY	0.795	0.852	0.871	0.865	0.812
ROTOR MOMENTUM RISE EFFICIENCY	0.860	0.903	0.894	0.865	0.833
ROTOR HEAD RISE COEFFICIENT	0.285	0.315	0.328	0.334	0.336
STAGE HEAD RISE COEFFICIENT	0.253	0.282	0.306	0.316	0.307
FLOW COEFFICIENT	0.959	0.838	0.724	0.657	0.596
WT FLOW PER UNIT FRONTAL AREA	160.67	147.88	131.94	122.36	111.83
WT FLOW PER UNIT ANNULUS AREA	203.79	187.58	167.36	155.21	141.85
WT FLOW AT ORIFICE	32.56	29.97	26.74	24.80	22.67
WT FLOW AT ROTOR INLET	33.14	30.51	27.26	25.23	23.09
WT FLOW AT ROTOR OUTLET	34.05	31.13	27.93	25.82	23.66
WT FLOW AT STATOR OUTLET	34.52	31.35	28.91	27.50	26.41
ROTATIVE SPEED	7941.7	8025.3	7990.1	8001.4	7927.8
PERCENT OF DESIGN SPEED	99.0	100.1	99.6	99.8	98.9

TABLE VI. - Concluded. OVERALL PERFORMANCE

FOR STAGE 55-55

(d) 110 Percent design speed

Parameter	Reading		
	1692	1693	1694
ROTOR TOTAL PRESSURE RATIO..	1.212	1.235	1.241
STAGE TOTAL PRESSURE RATIO	1.197	1.218	1.224
ROTOR TOTAL TEMPERATURE RATIO	1.064	1.068	1.072
STAGE TOTAL TEMPERATURE RATIO	1.061	1.065	1.069
ROTOR TEMP. RISE EFFICIENCY	0.880	0.912	0.885
STAGE TEMP. RISE EFFICIENCY	0.858	0.899	0.866
ROTOR MOMENTUM RISE EFFICIENCY	0.843	0.891	0.861
ROTOR HEAD RISE COEFFICIENT	0.295	0.325	0.334
STAGE HEAD RISE COEFFICIENT..	0.276	0.304	0.312
FLOW COEFFICIENT	0.874	0.765	0.655
WT FLOW PER UNIT FRONTAL AREA	162.65	148.97	132.73
WT FLOW PER UNIT ANNULUS AREA	206.31	188.96	168.36
WT FLOW AT ORIFICE.....	32.97	30.19	26.90
WT FLOW AT ROTOR INLET	33.47	30.65	27.26
WT FLOW AT ROTOR OUTLET	34.42	31.44	27.94
WT FLOW AT STATOR OUTLET	35.24	32.28	29.89
ROTATIVE SPEED.....	8845.4	8840.4	8825.6
PERCENT OF DESIGN SPEED	110.3	110.2	110.0

(e) 120 Percent design speed

Parameter	Reading		
	1697	1696	1695
ROTOR TOTAL PRESSURE RATIO	1.251	1.282	1.290
STAGE TOTAL PRESSURE RATIO	1.236	1.267	1.269
ROTOR TOTAL TEMPERATURE RATIO	1.079	1.084	1.086
STAGE TOTAL TEMPERATURE RATIO	1.075	1.080	1.082
ROTOR TEMP. RISE EFFICIENCY...	0.839	0.879	0.883
STAGE TEMP. RISE EFFICIENCY	0.835	0.879	0.857
ROTOR MOMENTUM RISE EFFICIENCY	0.807	0.851	0.855
ROTOR HEAD RISE COEFFICIENT	0.295	0.327	0.335
STAGE HEAD RISE COEFFICIENT.	0.278	0.312	0.313
FLOW COEFFICIENT	0.816	0.746	0.677
WT FLOW PER UNIT FRONTAL AREA	163.80	154.87	144.85
WT FLOW PER UNIT ANNULUS AREA	207.77	196.44	183.73
WT FLOW AT ORIFICE.....	33.20	31.39	29.36
WT FLOW AT ROTOR INLET	33.71	31.87	29.79
WT FLOW AT ROTOR OUTLET	34.85	32.54	30.37
WT FLOW AT STATOR OUTLET	35.94	34.38	32.92
ROTATIVE SPEED.....	9582.6	9587.2	9598.7
PERCENT OF DESIGN SPEED	119.5	119.5	119.7

TABLE VII. - BLADE-ELEMENT DATA AT BLADE EDGES FOR ROTOR 55

(a) 80 Percent design speed; reading 1597

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.	52.9	59.7	30.7	288.7	1.051	10.08	1.135
2	24.026	24.028	0.0	47.7	58.2	37.4	288.5	1.047	10.13	1.127
3	23.322	23.343	0.0	45.1	57.9	35.5	288.3	1.045	10.14	1.124
4	21.173	21.285	0.	38.3	55.3	28.4	288.1	1.040	10.14	1.132
5	18.321	18.542	0.0	40.2	51.4	19.1	288.0	1.035	10.14	1.122
6	15.540	15.799	0.0	41.5	46.8	9.9	288.0	1.030	10.14	1.105
7	13.541	13.741	0.0	43.4	42.7	3.6	287.9	1.025	10.14	1.081
8	12.906	13.056	0.0	44.1	41.4	0.1	287.9	1.025	10.13	1.078
9	12.289	12.370	-0.0	44.9	40.7	-4.1	287.9	1.024	10.12	1.080

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	95.1	125.4	188.7	98.3	95.1	75.6	0	100.0	163.0	162.9
2	97.8	125.8	185.7	106.5	97.8	84.6	0.0	93.1	157.8	157.8
3	96.2	126.8	181.1	110.0	96.2	89.6	0.0	89.8	153.4	153.6
4	96.6	134.1	169.6	119.7	96.6	105.3	0.	83.1	139.3	140.1
5	96.2	133.9	154.1	108.3	96.2	102.3	0.0	86.4	120.4	121.8
6	96.3	131.4	140.7	100.0	96.3	98.5	0.0	87.0	102.6	104.3
7	96.6	123.3	131.4	89.7	96.6	89.6	0.0	84.8	89.1	90.4
8	96.0	122.9	128.0	88.2	96.0	88.2	0.0	85.5	84.7	85.7
9	94.0	124.3	124.0	88.2	94.0	88.0	-0.0	87.8	80.9	81.4

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.281	0.364	0.558	0.285	0.281	0.219	0.795
2	0.290	0.366	0.550	0.310	0.290	0.246	0.866
3	0.285	0.369	0.536	0.320	0.285	0.261	0.931
4	0.286	0.392	0.502	0.350	0.286	0.308	1.090
5	0.285	0.393	0.457	0.318	0.285	0.300	1.064
6	0.286	0.386	0.417	0.294	0.286	0.290	1.022
7	0.286	0.363	0.389	0.264	0.286	0.263	0.927
8	0.284	0.362	0.379	0.260	0.284	0.260	0.920
9	0.279	0.366	0.368	0.260	0.279	0.259	0.936

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	9.4	12.1	0.775	0.718	0.248	0.248	0.107	0.107
2	10.00	8.2	13.4	0.703	0.741	0.215	0.215	0.094	0.094
3	15.00	8.2	14.3	0.663	0.749	0.212	0.212	0.094	0.094
4	30.00	7.5	14.9	0.553	0.902	0.082	0.082	0.038	0.038
5	50.00	7.4	15.0	0.580	0.961	0.034	0.034	0.016	0.016
6	70.00	7.2	14.7	0.583	0.980	0.018	0.018	0.008	0.008
7	85.00	8.3	14.6	0.605	0.899	0.087	0.087	0.038	0.038
8	90.00	9.0	13.1	0.601	0.880	0.107	0.107	0.046	0.046
9	95.00	10.4	10.8	0.588	0.920	0.074	0.074	0.031	0.031

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(b) 80 Percent design speed; reading 1598

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	38.6	56.2	40.2	288.7	1.043	10.07	1.126
2	24.026	24.028	0.	35.1	54.7	37.2	288.6	1.041	10.13	1.126
3	23.322	23.343	0.0	34.3	54.4	34.8	288.3	1.041	10.14	1.129
4	21.173	21.285	-0.0	34.8	51.7	28.4	288.1	1.037	10.14	1.128
5	18.321	18.542	0.0	37.5	47.9	19.1	288.0	1.034	10.14	1.119
6	15.540	15.799	0.0	39.2	43.5	9.4	287.9	1.030	10.14	1.106
7	13.541	13.741	-0.0	42.0	39.5	1.8	287.9	1.026	10.14	1.083
8	12.906	13.056	0.0	42.9	38.6	-0.5	287.8	1.025	10.14	1.076
9	12.289	12.370	0.0	43.5	37.8	-4.9	287.8	1.025	10.11	1.080

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	109.0	126.8	195.9	129.7	109.0	99.1	0.0	79.0	162.8	162.7
2	111.7	132.1	193.4	135.5	111.7	108.0	0.	76.0	157.9	158.0
3	110.0	135.2	188.9	136.0	110.0	111.7	0.0	76.2	153.6	153.7
4	110.1	138.2	177.8	129.1	110.1	113.5	-0.0	78.9	139.6	140.4
5	109.1	138.4	162.8	116.3	109.1	109.9	0.0	84.2	120.8	122.3
6	108.5	137.7	149.6	108.3	108.5	106.8	0.0	86.9	103.0	104.7
7	108.1	130.6	140.0	97.1	108.1	97.1	-0.0	87.3	89.0	90.3
8	106.7	127.7	136.5	93.6	106.7	93.5	0.0	86.9	85.2	86.1
9	104.4	129.9	132.1	94.6	104.4	94.2	0.0	89.5	80.9	81.5

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.323	0.369	0.581	0.378	0.323	0.289	0.909
2	0.332	0.386	0.574	0.396	0.332	0.315	0.967
3	0.327	0.395	0.561	0.398	0.327	0.327	1.016
4	0.327	0.405	0.528	0.379	0.327	0.333	1.031
5	0.324	0.407	0.483	0.342	0.324	0.323	1.007
6	0.322	0.405	0.444	0.319	0.322	0.314	0.984
7	0.321	0.385	0.416	0.286	0.321	0.286	0.898
8	0.317	0.376	0.405	0.276	0.317	0.276	0.877
9	0.310	0.383	0.392	0.279	0.310	0.278	0.903

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	5.9	12.5	0.563	0.808	0.134	0.134	0.057	0.057
2	10.00	4.7	13.1	0.516	0.848	0.103	0.103	0.045	0.045
3	15.00	4.7	13.5	0.499	0.860	0.099	0.099	0.044	0.044
4	30.00	4.0	14.9	0.509	0.936	0.047	0.047	0.022	0.022
5	50.00	4.0	15.0	0.546	0.960	0.031	0.031	0.015	0.015
6	70.00	3.9	14.2	0.552	0.976	0.020	0.020	0.009	0.009
7	85.00	5.1	12.8	0.584	0.890	0.086	0.086	0.038	0.038
8	90.00	6.2	12.5	0.591	0.839	0.129	0.129	0.056	0.056
9	95.00	7.5	10.1	0.570	0.874	0.108	0.108	0.045	0.045

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(c) 80 Percent design speed; reading 1600

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	24.3	49.6	37.5	288.9	1.034	10.02	1.124
2	24.026	24.028	0.0	23.5	47.7	34.3	288.8	1.034	10.13	1.121
3	23.322	23.343	0.0	24.1	47.5	32.4	288.5	1.035	10.14	1.118
4	21.173	21.285	-0.0	26.6	44.7	26.3	288.1	1.034	10.14	1.117
5	18.321	18.542	0.0	26.6	40.6	20.0	288.0	1.034	10.14	1.116
6	15.540	15.799	0.0	29.6	36.5	10.8	287.8	1.032	10.15	1.107
7	13.541	13.741	0.0	31.6	33.1	3.3	287.7	1.029	10.14	1.098
8	12.906	13.056	0.0	34.3	31.9	-0.3	287.7	1.027	10.14	1.086
9	12.289	12.370	0.0	36.2	30.8	-2.5	287.6	1.025	10.13	1.068

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	138.3	146.2	213.4	167.9	138.3	133.2	0.0	60.2	162.5	162.4
2	143.5	154.1	213.3	171.2	143.5	141.4	0.0	61.3	157.9	157.9
3	140.6	155.1	207.9	167.7	140.6	141.6	0.0	63.3	153.2	153.4
4	141.2	157.5	198.5	157.1	141.2	140.8	-0.0	70.6	139.5	140.3
5	140.8	157.9	185.3	150.2	140.8	141.2	0.0	70.7	120.6	122.0
6	138.5	157.8	172.2	139.7	138.5	137.2	0.0	77.9	102.3	104.0
7	137.1	158.2	163.7	134.9	137.1	134.7	0.0	83.0	89.4	90.7
8	136.9	154.4	161.3	127.7	136.9	127.7	0.0	86.9	85.2	86.2
9	135.9	146.8	158.2	118.6	135.9	118.5	0.0	86.6	81.0	81.5

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.413	0.430	0.637	0.493	0.413	0.391	0.963
2	0.429	0.454	0.638	0.504	0.429	0.416	0.985
3	0.420	0.457	0.621	0.494	0.420	0.417	1.007
4	0.423	0.465	0.594	0.464	0.423	0.416	0.997
5	0.421	0.466	0.554	0.444	0.421	0.417	1.003
6	0.414	0.467	0.515	0.413	0.414	0.406	0.990
7	0.410	0.469	0.489	0.400	0.410	0.399	0.982
8	0.409	0.458	0.482	0.378	0.409	0.378	0.932
9	0.406	0.434	0.473	0.351	0.406	0.351	0.872

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-0.7	9.8	0.371	0.988	0.006	0.006	0.003	0.003
2	10.00	-2.3	10.3	0.356	0.968	0.015	0.015	0.007	0.007
3	15.00	-2.2	11.2	0.359	0.931	0.036	0.036	0.016	0.016
4	30.00	-3.1	12.8	0.397	0.956	0.024	0.024	0.011	0.011
5	50.00	-3.4	15.8	0.382	0.948	0.031	0.031	0.015	0.015
6	70.00	-3.2	15.6	0.404	0.928	0.046	0.046	0.021	0.021
7	85.00	-1.3	14.3	0.402	0.940	0.039	0.039	0.017	0.017
8	90.00	-0.5	12.7	0.443	0.890	0.069	0.069	0.030	0.030
9	95.00	0.5	12.5	0.482	0.759	0.145	0.145	0.061	0.061

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(d) 80 Percent design speed; reading 1606

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	16.1	42.6	34.6	289.1	1.029	9.95	1.096
2	24.026	24.028	0.0	15.6	41.0	31.4	289.0	1.030	10.13	1.095
3	23.322	23.343	0.0	16.0	40.6	29.4	288.6	1.031	10.14	1.097
4	21.173	21.285	0.0	18.2	37.7	23.6	288.0	1.032	10.15	1.102
5	18.321	18.542	0.0	22.5	33.8	14.5	287.8	1.032	10.15	1.103
6	15.540	15.799	0.0	24.8	29.6	6.7	287.8	1.030	10.15	1.098
7	13.541	13.741	0.0	25.3	26.2	2.8	287.8	1.026	10.15	1.073
8	12.906	13.056	0.0	26.4	25.4	2.2	287.8	1.023	10.14	1.047
9	12.289	12.370	0.0	27.5	24.7	0.7	287.8	1.022	10.09	1.034

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	181.6	177.6	246.7	207.2	181.6	170.6	0.0	49.3	167.0	166.8
2	186.2	188.7	246.6	213.1	186.2	181.8	0.0	50.6	161.7	161.7
3	182.6	191.7	240.5	211.4	182.6	184.3	0.0	52.9	156.5	156.6
4	184.2	196.8	232.9	204.0	184.2	186.9	0.0	61.6	142.5	143.3
5	184.1	200.8	221.7	191.7	184.1	185.5	0.0	76.8	123.5	125.0
6	184.8	203.1	212.5	185.7	184.8	184.4	0.0	85.0	104.9	106.7
7	185.9	196.5	207.2	177.8	185.9	177.6	0.0	83.9	91.4	92.8
8	184.0	184.7	203.6	165.6	184.0	165.5	0.0	82.0	87.2	88.3
9	180.2	176.4	198.3	156.4	180.2	156.4	0.0	81.5	82.8	83.4

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.549	0.528	0.745	0.616	0.549	0.507	0.939
2	0.564	0.563	0.746	0.635	0.564	0.542	0.976
3	0.552	0.572	0.727	0.631	0.552	0.550	1.009
4	0.558	0.589	0.706	0.610	0.558	0.559	1.014
5	0.558	0.602	0.672	0.575	0.558	0.556	1.008
6	0.560	0.610	0.644	0.558	0.560	0.554	0.998
7	0.564	0.590	0.628	0.534	0.564	0.533	0.955
8	0.558	0.553	0.617	0.496	0.558	0.496	0.900
9	0.545	0.527	0.600	0.467	0.545	0.467	0.868

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-7.7	6.9	0.271	0.915	0.027	0.027	0.012	0.012
2	10.00	-9.1	7.4	0.249	0.878	0.040	0.040	0.019	0.019
3	15.00	-9.1	8.2	0.240	0.874	0.044	0.044	0.021	0.021
4	30.00	-10.0	10.0	0.264	0.895	0.040	0.040	0.019	0.019
5	50.00	-10.1	10.4	0.310	0.902	0.040	0.040	0.020	0.020
6	70.00	-10.1	11.5	0.316	0.905	0.040	0.040	0.019	0.019
7	85.00	-8.2	13.9	0.322	0.798	0.075	0.075	0.033	0.033
8	90.00	-7.0	15.2	0.362	0.565	0.151	0.151	0.065	0.065
9	95.00	-5.6	15.6	0.385	0.439	0.194	0.194	0.082	0.082

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(e) 90 Percent design speed; reading 1588

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	47.9	58.2	40.5	288.7	1.064	10.05	1.170
2	24.026	24.028	0.0	42.3	56.5	37.7	288.6	1.058	10.13	1.165
3	23.322	23.343	0.	40.3	56.2	35.0	288.4	1.058	10.14	1.167
4	21.173	21.285	0.0	37.2	53.5	27.7	288.0	1.052	10.14	1.175
5	18.321	18.542	0.0	40.0	49.7	19.3	288.0	1.045	10.14	1.156
6	15.540	15.799	0.0	41.1	45.3	9.2	287.9	1.039	10.14	1.139
7	13.541	13.741	0.0	43.7	41.2	2.1	287.9	1.034	10.14	1.107
8	12.906	13.056	0.0	44.2	40.0	-0.8	287.8	1.033	10.13	1.102
9	12.289	12.370	0.0	45.2	39.3	-5.3	288.0	1.032	10.11	1.105

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	114.5	140.3	217.1	123.6	114.5	94.0	0.0	104.1	184.5	184.4
2	118.8	144.3	215.2	134.9	118.8	106.8	0.0	97.0	179.5	179.5
3	116.8	147.9	209.8	137.6	116.8	112.8	0.	95.6	174.3	174.5
4	116.9	155.4	196.5	139.7	116.9	123.7	0.0	94.0	158.0	158.8
5	116.1	152.1	179.4	123.4	116.1	116.5	0.0	97.8	136.9	138.5
6	115.2	152.1	163.8	116.1	115.2	114.6	0.0	99.9	116.4	118.4
7	115.6	143.1	153.7	103.5	115.6	103.4	0.0	98.9	101.3	102.8
8	114.7	142.0	149.9	101.9	114.7	101.8	0.0	99.0	96.4	97.6
9	112.5	143.7	145.3	101.7	112.5	101.2	0.0	102.0	91.9	92.6

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.340	0.406	0.645	0.358	0.340	0.272	0.821
2	0.353	0.419	0.640	0.392	0.353	0.310	0.899
3	0.347	0.430	0.624	0.400	0.347	0.328	0.966
4	0.348	0.454	0.585	0.409	0.348	0.362	1.059
5	0.345	0.446	0.534	0.362	0.345	0.342	1.003
6	0.343	0.447	0.487	0.342	0.343	0.33	0.995
7	0.344	0.421	0.457	0.304	0.344	0.304	0.894
8	0.341	0.418	0.446	0.300	0.341	0.300	0.888
9	0.334	0.423	0.432	0.299	0.334	0.298	0.900

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	7.9	12.9	0.698	0.724	0.232	0.232	0.098	0.098
2	10.00	6.5	13.6	0.622	0.765	0.185	0.185	0.081	0.081
3	15.00	6.5	13.8	0.592	0.782	0.177	0.177	0.079	0.079
4	30.00	5.8	14.1	0.542	0.911	0.074	0.074	0.035	0.035
5	50.00	5.7	15.1	0.587	0.946	0.046	0.046	0.022	0.022
6	70.00	5.7	13.9	0.580	0.966	0.030	0.030	0.014	0.014
7	85.00	6.8	13.2	0.614	0.877	0.105	0.105	0.046	0.046
8	90.00	7.7	12.2	0.607	0.847	0.134	0.134	0.058	0.058
9	95.00	9.0	9.6	0.597	0.900	0.091	0.091	0.038	0.038

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(f) 90 Percent design speed; reading 1594

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	38.2	55.6	40.1	288.8	1.055	10.04	1.166
2	24.026	24.028	-0.0	34.7	54.1	37.2	288.7	1.053	10.14	1.164
3	23.322	23.343	0.0	33.7	53.8	34.6	288.3	1.053	10.14	1.169
4	21.173	21.285	0.0	34.4	51.1	28.3	288.1	1.049	10.14	1.168
5	18.321	18.542	0.	37.7	47.3	19.3	288.0	1.043	10.14	1.153
6	15.540	15.799	0.0	39.0	42.8	8.9	287.9	1.038	10.14	1.138
7	13.541	13.741	0.0	42.1	39.0	1.4	287.9	1.034	10.14	1.109
8	12.906	13.056	0.0	43.1	38.1	-0.9	287.8	1.033	10.13	1.100
9	12.289	12.370	0.0	43.8	37.3	-5.4	287.8	1.033	10.12	1.105

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	126.9	144.5	224.3	148.4	126.9	113.6	0.0	89.3	185.0	184.9
2	130.0	150.7	221.8	155.5	130.0	123.9	-0.0	85.8	179.8	179.8
3	127.9	154.7	216.3	156.4	127.9	128.7	0.0	85.8	174.4	174.6
4	128.4	158.1	204.3	148.2	128.4	130.4	0.0	89.4	158.9	159.7
5	126.6	156.3	186.6	131.0	126.6	123.7	0.	95.5	137.1	138.8
6	125.4	157.2	171.0	123.6	125.4	122.1	0.0	99.0	116.3	118.2
7	125.2	149.4	161.0	110.9	125.2	110.9	0.0	100.1	101.4	102.9
8	123.6	145.9	157.0	106.5	123.6	106.5	0.0	99.8	96.9	98.0
9	121.1	148.9	152.1	108.0	121.1	107.5	0.0	103.0	92.1	92.7

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.378	0.420	0.668	0.432	0.378	0.330	0.895
2	0.387	0.439	0.661	0.453	0.387	0.361	0.953
3	0.381	0.452	0.645	0.457	0.381	0.376	1.007
4	0.383	0.463	0.609	0.434	0.383	0.382	1.015
5	0.377	0.459	0.556	0.385	0.377	0.363	0.977
6	0.374	0.463	0.510	0.364	0.374	0.360	0.974
7	0.373	0.440	0.480	0.327	0.373	0.327	0.886
8	0.368	0.430	0.468	0.314	0.368	0.314	0.862
9	0.361	0.439	0.453	0.318	0.361	0.317	0.888

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	5.3	12.5	0.560	0.808	0.135	0.135	0.057	0.057
2	10.00	4.1	13.1	0.513	0.835	0.114	0.114	0.050	0.050
3	15.00	4.1	13.4	0.493	0.865	0.096	0.096	0.043	0.043
4	30.00	3.3	14.8	0.506	0.929	0.052	0.052	0.024	0.024
5	50.00	3.3	15.1	0.556	0.959	0.032	0.032	0.015	0.015
6	70.00	3.2	13.7	0.552	0.982	0.015	0.015	0.007	0.007
7	85.00	4.6	12.4	0.588	0.888	0.087	0.087	0.039	0.039
8	90.00	5.7	12.1	0.598	0.838	0.129	0.129	0.056	0.056
9	95.00	7.0	9.5	0.577	0.884	0.098	0.098	0.041	0.041

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(g) 90 Percent design speed; reading 1595

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.729	24.714	0.0	31.3	53.0	39.6	288.8	1.051	10.02	1.162
2	24.026	24.028	0.0	29.1	51.4	36.3	288.8	1.049	10.13	1.163
3	23.322	23.343	0.0	29.1	51.0	33.9	288.5	1.049	10.14	1.166
4	21.173	21.285	0.0	31.3	48.3	27.6	288.0	1.047	10.15	1.163
5	18.321	18.542	0.0	34.3	44.4	18.3	287.9	1.043	10.14	1.152
6	15.540	15.799	0.0	36.6	40.1	8.5	287.9	1.038	10.15	1.136
7	13.541	13.741	0.0	39.3	36.4	0.8	287.9	1.034	10.14	1.111
8	12.906	13.056	0.0	41.0	35.4	-1.3	287.8	1.033	10.14	1.096
9	12.289	12.370	0.0	41.4	34.6	-4.8	287.7	1.032	10.11	1.098

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	139.8	151.0	232.0	167.4	139.8	129.0	0.0	78.4	185.2	185.0
2	144.0	159.6	230.6	173.2	144.0	139.5	0.0	77.5	180.2	180.2
3	141.6	163.1	225.0	171.8	141.6	142.6	0.0	79.2	174.9	175.1
4	141.3	165.0	212.4	159.2	141.3	141.1	0.0	85.6	158.6	159.4
5	139.9	166.0	196.0	144.3	139.9	137.1	0.0	93.6	137.2	138.9
6	138.1	165.0	180.5	133.9	138.1	132.5	0.0	98.3	116.2	118.2
7	137.2	159.2	170.5	123.2	137.2	123.2	0.0	100.9	101.1	102.6
8	135.6	153.0	166.4	115.5	135.6	115.5	0.0	100.4	96.5	97.7
9	133.1	154.3	161.6	116.1	133.1	115.7	0.0	102.0	91.7	92.3

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R
1	0.417	0.441	0.693	0.489	0.417	0.377	0.923
2	0.430	0.467	0.689	0.507	0.430	0.408	0.969
3	0.423	0.478	0.673	0.504	0.423	0.418	1.007
4	0.423	0.485	0.635	0.468	0.423	0.415	0.998
5	0.419	0.489	0.586	0.425	0.419	0.404	0.979
6	0.413	0.487	0.540	0.396	0.413	0.391	0.959
7	0.410	0.470	0.510	0.364	0.410	0.364	0.898
8	0.405	0.452	0.497	0.341	0.405	0.341	0.852
9	0.397	0.456	0.483	0.343	0.397	0.342	0.870

RP	PERCENT SPAN	INCIDENCE MEAN	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	2.7	11.9	0.467	0.857	0.087	0.087	0.038	0.038
2	10.00	1.3	12.3	0.435	0.893	0.064	0.064	0.029	0.029
3	15.00	1.3	12.7	0.428	0.909	0.057	0.057	0.026	0.026
4	30.00	0.6	14.0	0.464	0.944	0.037	0.037	0.017	0.017
5	50.00	0.5	14.1	0.504	0.953	0.033	0.033	0.016	0.016
6	70.00	0.5	13.3	0.516	0.967	0.024	0.024	0.011	0.011
7	85.00	2.0	11.8	0.541	0.890	0.078	0.078	0.035	0.035
8	90.00	3.1	11.7	0.568	0.810	0.134	0.134	0.058	0.058
9	95.00	4.3	10.1	0.548	0.835	0.123	0.123	0.052	0.052

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(h) 90 Percent design speed; reading 1596

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	25.5	49.4	37.4	289.0	1.046	10.00	1.163
2	24.026	24.028	0.0	24.2	47.8	34.3	288.9	1.045	10.12	1.161
3	23.322	23.343	0.0	24.9	47.5	32.4	288.6	1.046	10.14	1.160
4	21.173	21.285	-0.0	27.4	44.7	26.3	288.0	1.045	10.14	1.154
5	18.321	18.542	0.0	30.6	40.8	17.7	287.9	1.041	10.15	1.141
6	15.540	15.799	0.0	32.7	36.5	8.6	287.8	1.037	10.15	1.131
7	13.541	13.741	0.0	35.2	32.8	0.8	287.8	1.034	10.14	1.112
8	12.906	13.056	0.0	37.1	31.8	-1.0	287.7	1.032	10.14	1.090
9	12.289	12.370	-0.0	37.5	31.1	-3.4	287.7	1.032	10.10	1.090

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	158.4	164.9	243.3	187.2	158.4	148.8	0.0	71.0	184.7	184.6
2	162.6	173.3	241.8	191.4	162.6	158.1	0.0	71.0	179.0	179.0
3	159.8	175.2	236.4	188.1	159.8	158.9	0.0	73.7	174.3	174.4
4	159.5	176.7	224.5	175.0	159.5	156.9	-0.0	81.3	158.0	158.9
5	158.7	177.0	209.6	159.8	158.7	152.3	0.0	90.1	137.0	138.7
6	157.5	177.5	195.9	151.1	157.5	149.4	0.0	95.8	116.4	118.4
7	157.6	175.1	187.4	143.1	157.6	143.1	0.0	100.9	101.5	103.0
8	155.9	165.9	183.4	132.4	155.9	132.3	0.0	100.0	96.6	97.7
9	152.6	165.2	178.2	131.3	152.6	131.1	-0.0	100.5	92.1	92.7

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.475	0.484	0.730	0.550	0.475	0.437	0.940
2	0.488	0.510	0.726	0.564	0.488	0.465	0.972
3	0.480	0.516	0.710	0.554	0.480	0.468	0.995
4	0.480	0.522	0.675	0.517	0.480	0.463	0.984
5	0.477	0.524	0.630	0.473	0.477	0.451	0.960
6	0.473	0.526	0.589	0.448	0.473	0.443	0.948
7	0.474	0.520	0.563	0.425	0.474	0.425	0.908
8	0.469	0.492	0.551	0.392	0.469	0.392	0.849
9	0.458	0.490	0.535	0.389	0.458	0.389	0.859

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-0.9	9.7	0.393	0.948	0.027	0.027	0.012	0.012
2	10.00	-2.3	10.3	0.370	0.959	0.021	0.021	0.010	0.010
3	15.00	-2.2	11.2	0.374	0.935	0.035	0.035	0.016	0.016
4	30.00	-3.0	12.7	0.412	0.933	0.038	0.038	0.018	0.018
5	50.00	-3.1	13.5	0.454	0.946	0.031	0.031	0.015	0.015
6	70.00	-3.2	13.4	0.461	0.963	0.022	0.022	0.010	0.010
7	85.00	-1.6	11.9	0.476	0.891	0.065	0.065	0.029	0.029
8	90.00	-0.6	12.0	0.515	0.774	0.130	0.130	0.056	0.056
9	95.00	0.9	11.6	0.502	0.779	0.135	0.135	0.057	0.057

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(i) 90 Percent design speed; reading 1604

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	18.5	43.9	34.8	289.1	1.040	9.93	1.131
2	24.026	24.028	0.0	17.9	42.4	31.4	289.0	1.041	10.12	1.137
3	23.322	23.343	0.0	18.4	42.0	29.5	288.6	1.043	10.15	1.136
4	21.173	21.285	0.0	20.5	39.1	23.8	288.0	1.043	10.15	1.137
5	18.321	18.542	0.0	24.0	35.1	15.0	287.8	1.041	10.15	1.131
6	15.540	15.799	0.0	25.9	30.8	7.4	287.8	1.038	10.15	1.120
7	13.541	13.741	0.0	26.2	27.2	3.9	287.8	1.032	10.15	1.085
8	12.906	13.056	0.0	27.7	26.4	2.6	287.8	1.029	10.14	1.056
9	12.289	12.370	0.0	29.2	25.8	0.9	287.8	1.027	10.09	1.041

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	194.6	191.2	269.8	220.8	194.6	181.3	0.0	60.8	187.0	186.9
2	199.2	205.1	269.7	228.6	199.2	195.2	0.0	62.9	181.9	181.9
3	196.0	207.7	264.0	226.5	196.0	197.1	0.0	65.5	176.8	177.0
4	197.7	211.8	254.7	216.8	197.7	198.4	0.0	74.0	160.5	161.4
5	197.3	215.1	241.1	203.4	197.3	196.4	0.0	87.6	138.7	140.4
6	198.1	216.8	230.6	196.7	198.1	195.0	0.0	94.6	117.9	119.9
7	199.5	206.9	224.3	186.1	199.5	185.7	0.0	91.4	102.6	104.2
8	197.1	195.5	219.9	173.3	197.1	173.1	0.0	90.9	97.7	98.8
9	192.7	186.7	214.0	162.9	192.7	162.9	0.0	91.2	93.1	93.8

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.590	0.568	0.819	0.655	0.590	0.538	0.932
2	0.606	0.611	0.820	0.682	0.606	0.582	0.980
3	0.596	0.620	0.802	0.676	0.596	0.586	1.006
4	0.602	0.633	0.775	0.648	0.602	0.593	1.004
5	0.601	0.645	0.734	0.610	0.601	0.589	0.996
6	0.603	0.652	0.702	0.591	0.603	0.586	0.984
7	0.608	0.622	0.684	0.559	0.608	0.558	0.931
8	0.600	0.586	0.670	0.519	0.600	0.519	0.878
9	0.586	0.558	0.651	0.487	0.586	0.487	0.845

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-6.4	7.2	0.307	0.895	0.039	0.039	0.018	0.018
2	10.00	-7.7	7.3	0.281	0.909	0.035	0.035	0.017	0.017
3	15.00	-7.6	8.3	0.277	0.872	0.053	0.053	0.025	0.025
4	30.00	-8.6	10.2	0.302	0.862	0.061	0.061	0.029	0.029
5	50.00	-8.9	10.9	0.340	0.865	0.062	0.062	0.030	0.030
6	70.00	-8.9	12.2	0.342	0.863	0.063	0.063	0.029	0.029
7	85.00	-7.2	15.0	0.352	0.738	0.105	0.105	0.046	0.046
8	90.00	-6.0	15.6	0.392	0.552	0.165	0.165	0.071	0.071
9	95.00	-4.5	15.9	0.419	0.432	0.204	0.204	0.086	0.086

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(j) 100 Percent design speed, reading 1592

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	53.0	58.9	39.6	288.6	1.083	10.04	1.221
2	24.026	24.028	0.0	46.8	57.2	37.4	288.6	1.076	10.13	1.206
3	23.322	23.343	0.0	43.9	56.8	34.9	288.5	1.073	10.14	1.206
4	21.173	21.285	0.0	37.8	54.0	28.0	288.1	1.064	10.14	1.216
5	18.321	18.542	0.0	40.1	50.3	18.9	288.0	1.056	10.14	1.200
6	15.540	15.799	0.0	41.5	45.7	8.8	287.9	1.048	10.14	1.174
7	13.541	13.741	-0.0	43.9	41.9	2.1	287.9	1.041	10.14	1.135
8	12.906	13.056	0.0	44.5	40.8	-1.2	287.9	1.040	10.14	1.131
9	12.289	12.370	0.0	45.2	39.9	-5.0	287.7	1.039	10.12	1.131

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	123.9	158.4	239.8	123.6	123.9	95.2	0.0	126.5	205.4	205.3
2	128.7	159.4	237.4	137.3	128.7	109.1	0.0	116.2	199.5	199.5
3	127.1	162.3	231.8	142.5	127.1	116.9	0.0	112.6	193.9	194.1
4	127.3	170.6	216.7	152.6	127.3	134.7	0.0	104.6	175.3	176.3
5	126.3	169.9	197.8	137.4	126.3	130.0	0.0	109.5	152.2	154.0
6	125.6	168.2	180.0	127.5	125.6	126.0	0.0	111.5	128.9	131.1
7	125.3	158.5	168.4	114.3	125.3	114.2	-0.0	110.0	112.5	114.1
8	124.1	158.2	164.0	112.8	124.1	112.7	0.0	110.9	107.3	108.5
9	122.0	158.6	158.9	112.2	122.0	111.8	0.0	112.5	101.9	102.6

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.369	0.456	0.714	0.356	0.369	0.274	0.769
2	0.383	0.461	0.707	0.397	0.383	0.315	0.848
3	0.379	0.470	0.691	0.413	0.379	0.339	0.920
4	0.379	0.498	0.646	0.445	0.379	0.393	1.058
5	0.377	0.498	0.590	0.403	0.377	0.381	1.029
6	0.374	0.495	0.537	0.375	0.374	0.370	1.003
7	0.374	0.467	0.502	0.336	0.374	0.336	0.911
8	0.370	0.466	0.489	0.332	0.370	0.332	0.909
9	0.363	0.467	0.474	0.331	0.363	0.330	0.917

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	8.6	11.9	0.779	0.706	0.267	0.267	0.115	0.115
2	10.00	7.1	13.3	0.692	0.729	0.230	0.230	0.101	0.101
3	15.00	7.1	13.7	0.650	0.749	0.216	0.216	0.096	0.096
4	30.00	6.3	14.4	0.551	0.902	0.083	0.083	0.039	0.039
5	50.00	6.3	14.8	0.584	0.954	0.041	0.041	0.019	0.019
6	70.00	6.1	13.6	0.586	0.968	0.029	0.029	0.013	0.013
7	85.00	7.5	13.1	0.612	0.901	0.086	0.086	0.038	0.038
8	90.00	8.4	11.8	0.606	0.886	0.102	0.102	0.044	0.044
9	95.00	9.6	9.9	0.593	0.914	0.079	0.079	0.033	0.033

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(k) *100 Percent design speed; reading 1614*

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.729	24.714	-0.0	41.1	56.0	40.4	288.9	1.073	10.02	1.210
2	24.026	24.028	-0.0	38.5	54.4	36.9	288.7	1.069	10.13	1.212
3	23.322	23.343	-0.0	37.3	54.1	34.2	288.4	1.068	10.14	1.216
4	21.173	21.285	-0.0	36.5	51.3	27.0	288.1	1.065	10.14	1.223
5	18.321	18.542	-0.0	38.4	47.5	18.8	288.0	1.056	10.14	1.200
6	15.540	15.799	-0.0	39.9	43.3	8.6	287.9	1.049	10.14	1.177
7	13.541	13.741	-0.0	42.6	39.5	1.6	287.9	1.042	10.14	1.137
8	12.906	13.056	-0.0	43.3	38.3	-1.2	287.8	1.042	10.13	1.129
9	12.289	12.370	-0.0	43.8	37.6	-5.0	287.8	1.041	10.11	1.133

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	138.6	158.4	248.1	156.7	138.6	119.4	-0.0	104.1	205.7	205.6
2	144.3	166.8	248.2	163.2	144.3	130.5	-0.0	103.9	201.9	201.9
3	141.9	171.0	241.9	164.5	141.9	136.1	-0.0	103.6	195.9	196.1
4	142.3	178.0	227.9	160.5	142.3	143.0	-0.0	106.0	177.9	178.9
5	140.3	174.9	207.9	144.9	140.3	137.1	-0.0	108.5	153.4	155.2
6	138.2	174.6	189.9	135.6	138.2	134.0	-0.1	111.9	130.1	132.3
7	138.1	165.1	178.9	121.5	138.1	121.5	-0.1	111.9	113.6	115.3
8	136.7	162.9	174.3	118.5	136.7	118.5	-0.0	111.8	108.1	109.3
9	133.5	164.7	168.6	119.3	133.5	118.9	-0.0	114.1	102.9	103.6

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R
1	0.414	0.458	0.740	0.453	0.414	0.345	0.862
2	0.432	0.485	0.742	0.474	0.432	0.379	0.904
3	0.424	0.498	0.723	0.479	0.424	0.396	0.959
4	0.426	0.521	0.682	0.470	0.426	0.418	1.005
5	0.420	0.513	0.622	0.425	0.420	0.402	0.977
6	0.413	0.514	0.568	0.399	0.413	0.395	0.970
7	0.413	0.487	0.535	0.358	0.413	0.358	0.879
8	0.409	0.480	0.521	0.349	0.409	0.349	0.867
9	0.399	0.486	0.504	0.352	0.399	0.351	0.890

RP	PERCENT SPAN	INCIDENCE MEAN	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	5.7	12.7	0.602	0.761	0.184	0.184	0.078	0.078
2	10.00	4.4	12.8	0.574	0.817	0.133	0.133	0.059	0.059
3	15.00	4.4	13.0	0.553	0.843	0.118	0.118	0.053	0.053
4	30.00	3.6	13.4	0.542	0.915	0.067	0.067	0.032	0.032
5	50.00	3.6	14.7	0.566	0.953	0.038	0.038	0.018	0.018
6	70.00	3.7	13.4	0.566	0.966	0.028	0.028	0.013	0.013
7	85.00	5.0	12.6	0.600	0.884	0.093	0.093	0.041	0.041
8	90.00	5.9	11.8	0.599	0.843	0.130	0.130	0.056	0.056
9	95.00	7.4	9.9	0.579	0.890	0.095	0.095	0.040	0.040

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(*l*) 100 Percent design speed; reading 1613

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	-0.0	33.5	53.3	39.7	288.9	1.065	10.00	1.207
2	24.026	24.028	-0.0	31.9	51.7	36.0	288.9	1.064	10.12	1.209
3	23.322	23.343	-0.0	31.6	51.4	33.4	288.7	1.064	10.14	1.214
4	21.173	21.285	-0.0	32.5	48.6	27.7	287.9	1.061	10.15	1.210
5	18.321	18.542	-0.0	35.8	44.8	18.2	287.8	1.055	10.15	1.194
6	15.540	15.799	-0.0	37.5	40.5	8.3	287.9	1.049	10.15	1.175
7	13.541	13.741	-0.0	40.4	36.8	0.8	287.9	1.044	10.15	1.138
8	12.906	13.056	-0.0	42.0	35.7	-1.8	287.8	1.041	10.14	1.123
9	12.289	12.370	-0.0	42.3	35.0	-5.3	287.7	1.041	10.10	1.128

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	154.4	166.4	258.3	180.2	154.4	138.7	-0.0	91.9	207.1	206.9
2	158.8	175.7	256.2	184.4	158.8	149.2	-0.0	92.8	201.1	201.1
3	156.1	179.8	249.9	183.5	156.1	153.1	-0.1	94.3	195.2	195.3
4	156.2	182.0	236.3	173.3	156.2	153.5	-0.0	97.8	177.3	178.2
5	154.4	182.1	217.6	155.5	154.4	147.7	-0.0	106.6	153.4	155.2
6	152.5	182.7	200.7	146.5	152.5	145.0	-0.0	111.3	130.3	132.5
7	151.4	174.0	189.1	132.4	151.4	132.4	-0.1	112.9	113.1	114.8
8	149.8	168.8	184.5	125.6	149.8	125.6	-0.0	112.9	107.7	109.0
9	146.5	171.1	179.0	127.1	146.5	126.5	-0.0	115.1	102.7	103.4

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.463	0.484	0.774	0.524	0.463	0.404	0.898
2	0.477	0.513	0.769	0.538	0.477	0.436	0.940
3	0.468	0.526	0.750	0.536	0.468	0.448	0.981
4	0.469	0.534	0.710	0.509	0.469	0.451	0.983
5	0.464	0.536	0.654	0.458	0.464	0.435	0.957
6	0.458	0.540	0.602	0.433	0.458	0.428	0.950
7	0.454	0.514	0.567	0.391	0.454	0.391	0.874
8	0.449	0.498	0.553	0.371	0.449	0.371	0.838
9	0.439	0.505	0.536	0.375	0.439	0.374	0.863

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	3.0	12.0	0.501	0.853	0.094	0.094	0.040	0.040
2	10.00	1.7	11.9	0.481	0.875	0.080	0.080	0.036	0.036
3	15.00	1.7	12.2	0.471	0.894	0.071	0.071	0.032	0.032
4	30.00	0.9	14.1	0.486	0.925	0.053	0.053	0.025	0.025
5	50.00	0.9	14.1	0.532	0.942	0.043	0.043	0.020	0.020
6	70.00	0.9	13.1	0.533	0.960	0.030	0.030	0.014	0.014
7	85.00	2.4	11.9	0.566	0.860	0.104	0.104	0.046	0.046
8	90.00	3.3	11.2	0.585	0.812	0.138	0.138	0.059	0.059
9	95.00	4.8	9.6	0.562	0.846	0.119	0.119	0.050	0.050

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(m) 100 Percent design speed; reading 1611

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	-0.0	27.8	49.0	36.8	289.2	1.060	9.97	1.208
2	24.026	24.028	-0.0	26.3	47.7	33.9	289.1	1.059	10.13	1.208
3	23.322	23.343	-0.0	26.3	47.3	31.9	288.6	1.060	10.14	1.209
4	21.173	21.285	-0.0	28.3	44.5	25.9	287.8	1.059	10.15	1.203
5	18.321	18.542	-0.0	31.4	40.6	17.4	287.9	1.053	10.15	1.184
6	15.540	15.799	-0.0	33.5	36.4	8.0	287.8	1.048	10.14	1.168
7	13.541	13.741	-0.0	36.4	32.8	0.6	287.8	1.044	10.15	1.138
8	12.906	13.056	-0.0	37.7	31.7	-0.8	287.7	1.041	10.14	1.113
9	12.289	12.370	-0.0	38.0	31.2	-3.1	287.8	1.040	10.08	1.115

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	180.4	184.1	275.1	203.3	180.4	162.9	-0.1	85.9	207.6	207.5
2	183.3	192.8	272.4	208.1	183.3	172.8	-0.0	85.5	201.4	201.4
3	181.1	195.9	266.8	206.9	181.1	175.6	-0.0	86.7	195.9	196.1
4	181.4	198.4	254.1	194.3	181.4	174.8	-0.0	94.0	177.9	178.9
5	179.2	197.3	236.2	176.5	179.2	168.4	-0.0	102.8	153.8	155.6
6	177.4	198.0	220.2	166.7	177.4	165.1	-0.1	109.4	130.5	132.7
7	177.5	192.0	211.0	154.5	177.5	154.5	-0.1	114.0	114.1	115.8
8	175.5	183.1	206.4	144.9	175.5	144.9	-0.0	111.9	108.5	109.8
9	171.1	182.2	200.0	143.9	171.1	143.7	-0.0	112.1	103.6	104.2

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.545	0.540	0.831	0.596	0.545	0.477	0.903
2	0.554	0.567	0.823	0.612	0.554	0.508	0.943
3	0.547	0.577	0.806	0.609	0.547	0.517	0.970
4	0.549	0.586	0.769	0.574	0.549	0.516	0.964
5	0.542	0.584	0.715	0.523	0.542	0.499	0.940
6	0.536	0.588	0.666	0.495	0.536	0.490	0.931
7	0.537	0.570	0.638	0.459	0.537	0.459	0.870
8	0.531	0.543	0.624	0.430	0.531	0.430	0.825
9	0.516	0.541	0.604	0.427	0.516	0.426	0.839

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-1.3	9.1	0.435	0.922	0.042	0.042	0.019	0.019
2	10.00	-2.4	9.8	0.409	0.941	0.032	0.032	0.015	0.015
3	15.00	-2.4	10.7	0.401	0.933	0.038	0.038	0.018	0.018
4	30.00	-3.3	12.3	0.431	0.924	0.045	0.045	0.022	0.022
5	50.00	-3.3	13.3	0.472	0.930	0.043	0.043	0.021	0.021
6	70.00	-3.3	12.8	0.479	0.942	0.036	0.036	0.017	0.017
7	85.00	-1.7	11.7	0.509	0.861	0.084	0.084	0.037	0.037
8	90.00	-0.7	12.2	0.534	0.768	0.136	0.136	0.059	0.059
9	95.00	0.9	11.8	0.518	0.798	0.123	0.123	0.052	0.052

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(n) 100 Percent design speed; reading 1603

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	21.9	45.6	35.1	289.1	1.056	9.93	1.186
2	24.026	24.028	0.0	20.7	44.1	32.2	289.0	1.055	10.13	1.183
3	23.322	23.343	0.0	21.8	43.7	29.9	288.7	1.055	10.15	1.183
4	21.173	21.285	0.0	24.1	40.7	23.7	288.0	1.054	10.15	1.179
5	18.321	18.542	0.0	27.3	36.8	14.8	287.8	1.052	10.15	1.172
6	15.540	15.799	0.0	28.8	32.4	7.1	287.8	1.046	10.16	1.153
7	13.541	13.741	0.0	30.4	28.9	2.9	287.8	1.037	10.16	1.107
8	12.906	13.056	0.0	32.2	28.1	1.0	287.7	1.035	10.14	1.079
9	12.289	12.370	0.0	32.8	27.5	0.6	287.8	1.030	10.09	1.058

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	201.6	201.0	288.2	227.9	201.6	186.5	0.0	74.8	206.0	205.8
2	206.1	211.7	286.9	234.2	206.1	198.1	0.0	74.7	199.6	199.6
3	202.7	214.3	280.4	229.6	202.7	199.0	0.0	79.5	193.8	194.0
4	204.2	218.3	269.3	217.8	204.2	199.3	0.0	89.0	175.7	176.6
5	203.8	222.2	254.4	204.1	203.8	197.4	0.0	102.1	152.3	154.1
6	203.5	222.3	241.1	196.2	203.5	194.7	0.0	107.2	129.3	131.5
7	204.1	207.9	233.1	179.5	204.1	179.3	0.0	105.3	112.7	114.4
8	201.5	197.9	228.3	167.4	201.5	167.4	0.0	105.6	107.4	108.7
9	196.7	187.5	221.7	157.7	196.7	157.7	0.0	101.5	102.3	103.0

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.613	0.594	0.877	0.673	0.613	0.551	0.925
2	0.628	0.628	0.875	0.695	0.628	0.588	0.961
3	0.617	0.637	0.854	0.682	0.617	0.591	0.982
4	0.623	0.651	0.822	0.649	0.623	0.594	0.976
5	0.622	0.665	0.776	0.611	0.622	0.590	0.969
6	0.621	0.667	0.736	0.589	0.621	0.584	0.957
7	0.623	0.623	0.712	0.538	0.623	0.537	0.878
8	0.615	0.592	0.696	0.501	0.615	0.501	0.831
9	0.599	0.560	0.675	0.471	0.599	0.471	0.802

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-4.7	7.4	0.354	0.894	0.050	0.050	0.023	0.023
2	10.00	-6.0	8.2	0.328	0.896	0.048	0.048	0.022	0.022
3	15.00	-6.0	8.7	0.335	0.888	0.054	0.054	0.025	0.025
4	30.00	-7.0	10.2	0.366	0.888	0.056	0.056	0.027	0.027
5	50.00	-7.2	10.6	0.400	0.894	0.055	0.055	0.027	0.027
6	70.00	-7.2	11.9	0.397	0.907	0.047	0.047	0.022	0.022
7	85.00	-5.5	13.9	0.432	0.785	0.094	0.094	0.041	0.041
8	90.00	-4.3	14.1	0.468	0.634	0.153	0.153	0.066	0.066
9	95.00	-2.8	15.5	0.482	0.538	0.178	0.178	0.075	0.075

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(o) 110 Percent design speed; reading 1694

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	44.2	55.6	40.5	288.9	1.092	10.08	1.260
2	24.026	24.028	0.0	39.3	55.0	38.2	288.7	1.087	10.13	1.264
3	23.322	23.343	0.0	36.8	54.3	35.4	288.2	1.085	10.13	1.265
4	21.173	21.285	0.0	36.6	51.6	28.3	288.0	1.076	10.14	1.271
5	18.321	18.542	0.0	39.3	47.7	18.4	288.0	1.069	10.14	1.249
6	15.540	15.799	0.0	40.3	43.1	8.1	287.9	1.060	10.14	1.220
7	13.541	13.741	0.0	43.4	39.0	0.8	288.0	1.051	10.14	1.167
8	12.906	13.056	0.0	44.1	38.1	-1.6	287.9	1.050	10.14	1.156
9	12.289	12.370	0.0	44.2	37.4	-5.0	287.8	1.049	10.12	1.161

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	157.0	174.9	277.8	164.9	157.0	125.3	0.0	122.0	229.3	229.2
2	157.2	180.4	273.7	177.6	157.2	139.6	0.0	114.3	224.1	224.2
3	154.5	184.5	264.9	181.1	154.5	147.6	0.0	110.6	215.2	215.4
4	155.0	191.0	249.5	174.2	155.0	153.4	0.0	113.9	195.5	196.6
5	153.6	191.8	228.3	156.5	153.6	148.5	0.0	121.5	169.0	171.0
6	153.0	192.4	209.3	148.2	153.0	146.7	0.0	124.4	142.9	145.3
7	153.7	181.4	197.8	131.8	153.7	131.8	0.0	124.6	124.6	126.4
8	151.9	178.6	193.0	128.3	151.9	128.3	0.0	124.2	119.2	120.6
9	148.5	180.7	187.1	130.2	148.5	129.6	0.0	125.9	113.8	114.5

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.471	0.503	0.833	0.475	0.471	0.361	0.798
2	0.472	0.522	0.821	0.513	0.472	0.403	0.888
3	0.464	0.535	0.795	0.525	0.464	0.428	0.956
4	0.465	0.558	0.749	0.509	0.465	0.448	0.990
5	0.461	0.563	0.685	0.459	0.461	0.435	0.967
6	0.459	0.567	0.628	0.437	0.459	0.432	0.959
7	0.461	0.535	0.594	0.389	0.461	0.389	0.858
8	0.456	0.526	0.579	0.378	0.456	0.378	0.845
9	0.445	0.533	0.561	0.384	0.445	0.383	0.873

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	5.3	12.9	0.651	0.744	0.201	0.201	0.085	0.085
2	10.00	4.9	14.2	0.582	0.791	0.161	0.161	0.070	0.070
3	15.00	4.7	14.2	0.544	0.818	0.144	0.144	0.064	0.064
4	30.00	3.9	14.8	0.543	0.928	0.058	0.058	0.027	0.027
5	50.00	3.8	14.3	0.583	0.955	0.038	0.038	0.018	0.018
6	70.00	3.4	12.9	0.574	0.980	0.016	0.016	0.008	0.008
7	85.00	4.6	11.8	0.614	0.886	0.091	0.091	0.040	0.040
8	90.00	5.7	11.4	0.615	0.849	0.122	0.122	0.053	0.053
9	95.00	7.2	9.9	0.589	0.886	0.097	0.097	0.041	0.041

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(p) 110 Percent design speed; reading 1693

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	33.1	51.4	39.3	289.0	1.080	10.06	1.244
2	24.026	24.028	0.0	30.3	50.5	36.1	288.8	1.077	10.14	1.260
3	23.322	23.343	0.0	30.0	50.1	33.8	288.5	1.076	10.14	1.266
4	21.173	21.285	0.0	32.2	47.2	26.6	288.0	1.074	10.14	1.266
5	18.321	18.542	0.0	35.4	43.3	17.8	287.9	1.066	10.14	1.238
6	15.540	15.799	0.0	36.7	38.7	7.7	287.9	1.059	10.14	1.217
7	13.541	13.741	0.0	39.5	34.8	0.1	287.9	1.052	10.14	1.170
8	12.906	13.056	0.0	40.8	33.9	-1.6	287.9	1.049	10.14	1.145
9	12.289	12.370	0.0	40.6	33.2	-4.0	287.8	1.048	10.11	1.147

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	183.0	186.1	293.3	201.2	183.0	155.8	0.0	101.7	229.2	229.1
2	183.3	196.3	288.4	209.9	183.3	169.6	0.1	99.0	222.6	222.7
3	180.6	200.5	281.6	208.9	180.6	173.6	0.1	100.2	216.1	216.3
4	181.3	205.8	266.8	194.9	181.3	174.2	0.1	109.6	195.9	196.9
5	179.7	203.8	247.0	174.4	179.7	166.1	0.1	118.2	169.5	171.5
6	179.4	207.3	230.0	167.7	179.4	166.2	0.0	123.9	143.9	146.3
7	180.0	199.2	219.2	153.7	180.0	153.7	0.0	126.8	125.2	127.1
8	177.8	191.2	214.2	144.9	177.8	144.9	0.0	124.8	119.4	120.8
9	173.8	191.8	207.6	146.1	173.8	145.8	0.0	124.7	113.7	114.4

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.553	0.540	0.887	0.585	0.553	0.453	0.851
2	0.554	0.573	0.872	0.613	0.554	0.495	0.925
3	0.546	0.587	0.851	0.611	0.546	0.508	0.962
4	0.549	0.605	0.808	0.573	0.549	0.512	0.961
5	0.544	0.601	0.747	0.514	0.544	0.490	0.924
6	0.543	0.614	0.696	0.497	0.543	0.492	0.927
7	0.545	0.591	0.663	0.456	0.545	0.456	0.854
8	0.538	0.566	0.648	0.429	0.538	0.429	0.815
9	0.525	0.569	0.627	0.433	0.525	0.432	0.839

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	1.1	11.6	0.507	0.804	0.125	0.125	0.054	0.054
2	10.00	0.5	12.1	0.462	0.890	0.069	0.069	0.031	0.031
3	15.00	0.4	12.6	0.452	0.918	0.053	0.053	0.024	0.024
4	30.00	-0.5	13.1	0.487	0.939	0.042	0.042	0.020	0.020
5	50.00	-0.7	13.7	0.535	0.954	0.032	0.032	0.015	0.015
6	70.00	-0.9	12.5	0.526	0.973	0.019	0.019	0.009	0.009
7	85.00	0.4	11.1	0.557	0.889	0.074	0.074	0.033	0.033
8	90.00	1.5	11.4	0.577	0.803	0.130	0.130	0.056	0.056
9	95.00	2.9	10.9	0.550	0.829	0.118	0.118	0.049	0.049

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(q) 110 Percent design speed; reading 1692

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	27.1	47.8	36.3	289.1	1.075	10.04	1.227
2	24.026	24.028	0.0	26.3	46.9	33.4	288.9	1.072	10.13	1.239
3	23.322	23.343	0.0	26.5	46.4	31.1	288.4	1.072	10.14	1.243
4	21.173	21.285	0.0	28.3	43.4	24.8	288.0	1.071	10.15	1.240
5	18.321	18.542	0.0	30.8	39.4	15.9	287.8	1.064	10.15	1.226
6	15.540	15.799	0.0	31.5	34.9	8.0	287.9	1.056	10.15	1.199
7	13.541	13.741	0.0	34.2	31.2	2.7	288.0	1.046	10.15	1.135
8	12.906	13.056	0.0	35.5	30.3	1.1	287.9	1.043	10.14	1.107
9	12.289	12.370	0.0	35.2	29.7	0.8	287.9	1.039	10.10	1.088

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	208.1	206.6	309.5	228.2	208.1	184.0	0.1	94.0	229.2	229.0
2	208.7	215.6	305.2	231.5	208.7	193.4	0.1	95.5	222.8	222.8
3	205.6	218.5	297.9	228.5	205.6	195.5	0.1	97.6	215.6	215.8
4	207.2	223.9	285.4	217.2	207.2	197.1	0.0	106.2	196.3	197.4
5	206.1	226.6	266.8	202.4	206.1	194.6	0.1	116.0	169.5	171.5
6	205.8	227.9	251.0	196.3	205.8	194.4	0.1	119.0	143.7	146.1
7	207.2	211.7	242.2	175.2	207.2	175.1	0.1	119.1	125.5	127.3
8	204.6	202.9	236.9	165.3	204.6	165.2	0.1	117.7	119.5	120.9
9	199.7	195.3	229.9	159.5	199.7	159.5	0.1	112.7	114.1	114.8

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.635	0.606	0.944	0.669	0.635	0.539	0.884
2	0.637	0.636	0.931	0.682	0.637	0.570	0.927
3	0.627	0.646	0.909	0.675	0.627	0.578	0.951
4	0.633	0.663	0.872	0.644	0.633	0.584	0.951
5	0.630	0.675	0.815	0.603	0.630	0.579	0.944
6	0.629	0.682	0.767	0.587	0.629	0.581	0.945
7	0.633	0.633	0.740	0.524	0.633	0.523	0.845
8	0.625	0.605	0.723	0.493	0.625	0.493	0.808
9	0.608	0.582	0.701	0.475	0.608	0.475	0.799

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-2.5	8.6	0.432	0.801	0.109	0.109	0.049	0.049
2	10.00	-3.2	9.3	0.414	0.878	0.066	0.066	0.030	0.030
3	15.00	-3.3	9.9	0.411	0.895	0.059	0.059	0.027	0.027
4	30.00	-4.3	11.3	0.436	0.899	0.059	0.059	0.028	0.028
5	50.00	-4.5	11.8	0.460	0.936	0.038	0.038	0.018	0.018
6	70.00	-4.7	12.7	0.443	0.945	0.032	0.032	0.015	0.015
7	85.00	-3.2	13.7	0.496	0.804	0.098	0.098	0.043	0.043
8	90.00	-2.1	14.1	0.518	0.685	0.152	0.152	0.066	0.066
9	95.00	-0.5	15.7	0.514	0.631	0.170	0.170	0.072	0.072

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(r) 120 Percent design speed; reading 1695

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	24.729	24.714	0.0	45.6	54.9	40.0	289.0	1.110	10.05	1.314
2	24.026	24.028	0.0	39.3	53.7	37.7	288.8	1.101	10.14	1.310
3	23.322	23.343	0.0	37.8	53.4	35.2	288.5	1.099	10.14	1.317
4	21.173	21.285	0.0	36.7	50.9	28.3	288.0	1.091	10.14	1.327
5	18.321	18.542	0.0	39.5	46.9	17.8	287.9	1.083	10.14	1.304
6	15.540	15.799	0.0	40.3	42.0	7.7	287.9	1.072	10.14	1.267
7	13.541	13.741	0.0	43.8	38.3	0.5	287.9	1.061	10.14	1.200
8	12.906	13.056	0.0	44.1	37.0	-1.8	287.9	1.058	10.14	1.182
9	12.289	12.370	0.0	44.1	36.4	-5.0	287.8	1.056	10.12	1.187

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	174.0	190.4	302.7	173.8	174.0	133.3	0.0	135.9	247.7	247.6
2	177.2	196.0	299.5	191.7	177.2	151.7	0.0	124.1	241.4	241.5
3	174.2	200.9	292.4	194.4	174.2	158.8	0.0	123.0	234.9	235.1
4	173.1	208.3	274.5	189.6	173.1	167.1	0.0	124.4	213.0	214.1
5	172.7	211.2	252.6	171.0	172.7	162.9	0.0	134.4	184.3	186.5
6	173.6	212.3	233.6	163.4	173.6	162.0	0.0	137.2	156.4	159.0
7	173.2	198.6	220.6	143.4	173.2	143.4	0.1	137.5	136.7	138.7
8	171.4	194.1	214.6	139.5	171.4	139.4	0.0	135.1	129.2	130.7
9	167.5	195.9	208.0	141.1	167.5	140.6	0.0	136.4	123.4	124.2

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R
1	0.525	0.546	0.913	0.498	0.525	0.382	0.766
2	0.535	0.566	0.904	0.553	0.535	0.438	0.856
3	0.526	0.582	0.882	0.563	0.526	0.460	0.912
4	0.523	0.607	0.829	0.553	0.523	0.487	0.965
5	0.521	0.619	0.763	0.501	0.521	0.477	0.943
6	0.524	0.626	0.706	0.482	0.524	0.478	0.933
7	0.523	0.586	0.666	0.423	0.523	0.423	0.828
8	0.517	0.573	0.648	0.411	0.517	0.411	0.813
9	0.505	0.579	0.627	0.417	0.505	0.415	0.839

RP	PERCENT SPAN	INCIDENCE MEAN	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	4.6	12.3	0.676	0.739	0.210	0.210	0.090	0.090
2	10.00	3.7	13.7	0.589	0.791	0.160	0.160	0.070	0.070
3	15.00	3.8	14.0	0.564	0.827	0.135	0.135	0.060	0.060
4	30.00	3.2	14.7	0.549	0.928	0.058	0.058	0.027	0.027
5	50.00	2.9	13.6	0.591	0.945	0.046	0.046	0.022	0.022
6	70.00	2.4	12.4	0.579	0.972	0.023	0.023	0.011	0.011
7	85.00	3.9	11.5	0.628	0.876	0.097	0.097	0.043	0.043
8	90.00	4.6	11.2	0.624	0.839	0.125	0.125	0.054	0.054
9	95.00	6.1	10.0	0.599	0.893	0.085	0.085	0.036	0.036

TABLE VII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(s) 120 Percent design speed; reading 1696

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	41.9	52.0	39.2	289.0	1.106	10.07	1.280
2	24.026	24.028	0.0	34.4	51.4	35.5	288.9	1.099	10.14	1.311
3	23.322	23.343	0.0	33.0	50.9	32.6	288.5	1.097	10.14	1.327
4	21.173	21.285	0.0	34.1	47.8	26.0	288.0	1.089	10.14	1.321
5	18.321	18.542	0.0	36.3	43.9	17.5	287.9	1.080	10.14	1.292
6	15.540	15.799	0.0	38.0	39.5	7.5	287 9	1.070	10.14	1.259
7	13.541	13.741	0.0	41.2	35.6	0.1	287.8	1.061	10.14	1.196
8	12.906	13.056	0.0	41.6	34.7	-1.2	287.8	1.058	10.14	1.174
9	12.289	12.370	0.0	41.2	33.9	-3.4	287.7	1.055	10.10	1.173

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	193.8	194.9	315.2	187.2	193.8	145.1	0.0	130.1	248.5	248.4
2	192.6	209.1	308.4	211.9	192.6	172.6	0.0	118.1	241.0	241.0
3	190.6	216.7	301.8	215.8	190.6	181.8	0.0	118.1	234.1	234.3
4	192.9	221.7	287.2	204.4	192.9	183.6	0.0	124.2	212.8	213.9
5	191.5	220.5	265.7	186.4	191.5	177.8	0.0	130.4	184.1	186.4
6	189.1	220.3	245.0	175.0	189.1	173.5	0.0	135.7	155.9	158.5
7	190.0	209.1	233.7	157.3	190.0	157.3	0.0	137.8	136.0	138.0
8	187.5	202.6	228.0	151.6	187.5	151.6	0.0	134.4	129.7	131.2
9	182.8	201.6	220.3	151.9	182.8	151.6	0.1	132.8	123.0	123.8

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.588	0.561	0.956	0.539	0.588	0.417	0.749
2	0.584	0.607	0.936	0.615	0.584	0.501	0.897
3	0.578	0.631	0.916	0.629	0.578	0.530	0.954
4	0.586	0.650	0.873	0.599	0.586	0.539	0.952
5	0.582	0.650	0.807	0.549	0.582	0.524	0.928
6	0.574	0.652	0.744	0.518	0.574	0.514	0.918
7	0.577	0.619	0.710	0.466	0.577	0.466	0.828
8	0.569	0.600	0.692	0.449	0.569	0.449	0.809
9	0.554	0.597	0.668	0.450	0.554	0.449	0.829

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	1.8	11.5	0.636	0.690	0.226	0.226	0.098	0.098
2	10.00	1.3	11.4	0.524	0.810	0.137	0.137	0.061	0.061
3	15.00	1.2	11.4	0.498	0.863	0.100	0.100	0.046	0.046
4	30.00	0.1	12.5	0.517	0.928	0.053	0.053	0.025	0.025
5	50.00	-0.1	13.3	0.546	0.948	0.039	0.039	0.019	0.019
6	70.00	-0.1	12.3	0.548	0.970	0.023	0.023	0.011	0.011
7	85.00	1.2	11.1	0.590	0.857	0.100	0.100	0.044	0.044
8	90.00	2.3	11.8	0.591	0.808	0.133	0.133	0.057	0.057
9	95.00	3.7	11.6	0.566	0.846	0.108	0.108	0.046	0.046

TABLE VII. - Concluded. BLADE-ELEMENT DATA AT BLADE EDGES

FOR ROTOR 55

(t) 120 Percent design speed; reading 1697

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	33.8	-3.3	33.8	-3.3	316.4	0.993	12.44	0.985
2	24.547	24.671	29.3	-2.6	29.3	-2.6	315.1	0.995	12.88	0.966
3	23.876	24.049	28.4	-2.5	28.4	-2.5	314.3	0.996	13.02	0.968
4	21.847	22.222	30.6	-1.9	30.6	-1.9	312.5	0.997	13.03	0.992
5	19.164	19.827	32.8	-0.8	32.8	-0.8	310.6	0.996	12.95	0.993
6	16.502	17.465	32.8	0.6	32.8	0.6	307.4	0.998	12.63	0.984
7	14.519	15.682	36.2	-3.1	36.2	-3.1	304.1	1.001	11.83	1.001
8	13.858	15.070	37.1	-4.3	37.1	-4.3	303.3	1.003	11.63	1.010
9	13.200	14.448	36.1	-8.0	36.1	-8.0	301.7	1.007	11.36	1.019

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	200.2	181.5	200.2	181.5	166.4	181.2	111.3	-10.5	0.	0.
2	217.1	188.8	217.1	188.8	189.2	188.6	106.4	-8.6	0.	0.
3	223.5	194.8	223.5	194.8	196.6	194.6	106.3	-8.4	0.	0.
4	228.6	206.9	228.6	206.9	196.8	206.8	116.2	-6.8	0.	0.
5	233.6	210.6	233.6	210.6	196.4	210.6	126.6	-3.1	0.	0.
6	232.8	207.6	232.8	207.6	195.6	207.6	126.2	2.1	0.	0.
7	211.7	197.8	211.7	197.8	170.9	197.5	125.0	-10.7	0.	0.
8	205.6	195.7	205.6	195.7	164.0	195.1	124.0	-14.8	0.	0.
9	196.3	188.6	196.3	188.6	158.6	186.7	115.7	-26.3	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.580	0.525	0.580	0.525	0.482	0.524	1.089
2	0.634	0.548	0.634	0.548	0.553	0.547	0.997
3	0.655	0.567	0.655	0.567	0.576	0.566	0.990
4	0.674	0.606	0.674	0.606	0.580	0.606	1.051
5	0.692	0.620	0.692	0.620	0.582	0.620	1.073
6	0.694	0.613	0.694	0.613	0.583	0.613	1.061
7	0.629	0.585	0.629	0.585	0.508	0.584	1.156
8	0.611	0.578	0.611	0.578	0.487	0.576	1.190
9	0.583	0.556	0.583	0.556	0.471	0.551	1.178

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-6.7	12.3	0.508	0.	0.076	0.076	0.052	0.052
2	10.00	-11.2	12.7	0.481	0.	0.145	0.145	0.096	0.096
3	15.00	-12.2	12.5	0.459	0.	0.126	0.126	0.082	0.082
4	30.00	-10.4	12.1	0.412	0.	0.032	0.032	0.019	0.019
5	50.00	-8.6	12.2	0.385	0.	0.026	0.026	0.014	0.014
6	70.00	-9.0	12.3	0.346	0.	0.058	0.058	0.027	0.027
7	85.00	-6.0	7.8	0.318	0.	-0.005	-0.005	-0.002	-0.002
8	90.00	-5.2	6.3	0.303	0.	-0.044	-0.044	-0.017	-0.017
9	95.00	-6.3	2.4	0.302	0.	-0.093	-0.093	-0.034	-0.034

TABLE VIII. - BLADE-ELEMENT DATA AT BLADE EDGES FOR STATOR 55

(a) 80 Percent design speed; reading 1597

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	52.9	4.4	52.9	4.4	303.5	0.995	11.44	0.985
2	24.547	24.671	47.6	4.5	47.6	4.5	302.0	0.997	11.42	0.988
3	23.876	24.049	44.8	2.9	44.8	2.9	301.4	0.997	11.40	0.991
4	21.847	22.222	37.8	1.1	37.8	1.1	299.6	0.999	11.47	0.988
5	19.164	19.827	39.4	1.1	39.4	1.1	298.0	0.999	11.37	0.992
6	16.502	17.465	40.6	1.0	40.6	1.0	296.5	1.001	11.20	0.993
7	14.519	15.682	42.5	-2.0	42.5	-2.0	295.1	1.002	10.96	1.001
8	13.858	15.070	43.2	-5.7	43.2	-5.7	295.0	1.002	10.93	1.001
9	13.200	14.448	44.0	-8.5	44.0	-8.5	294.8	1.002	10.93	0.999

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	122.8	107.6	122.8	107.6	74.0	107.3	98.0	8.3	0.	0.
2	123.5	109.5	123.5	109.5	83.3	109.1	91.2	8.5	0.	0.
3	124.6	111.2	124.6	111.2	88.4	111.0	87.8	5.7	0.	0.
4	132.2	116.0	132.2	116.0	104.5	116.0	80.9	2.2	0.	0.
5	131.6	114.7	131.6	114.7	101.6	114.7	83.6	2.1	0.	0.
6	128.0	108.1	128.0	108.1	97.1	108.1	83.3	2.0	0.	0.
7	118.7	99.8	118.7	99.8	87.5	99.8	80.2	-3.6	0.	0.
8	117.8	97.3	117.8	97.3	85.9	96.9	80.6	-9.6	0.	0.
9	118.5	94.9	118.5	94.9	85.3	93.9	82.3	-14.1	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.356	0.312	0.356	0.312	0.215	0.311	1.449
2	0.359	0.318	0.359	0.318	0.242	0.317	1.311
3	0.363	0.323	0.363	0.323	0.257	0.323	1.256
4	0.387	0.338	0.387	0.338	0.306	0.338	1.109
5	0.386	0.335	0.386	0.335	0.298	0.335	1.129
6	0.376	0.316	0.376	0.316	0.285	0.316	1.113
7	0.349	0.292	0.349	0.292	0.257	0.292	1.140
8	0.346	0.285	0.346	0.285	0.252	0.283	1.128
9	0.348	0.278	0.348	0.278	0.251	0.275	1.101

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	12.5	20.1	0.621	0.	0.184	0.184	0.125	0.125
2	10.00	7.1	19.8	0.557	0.	0.142	0.142	0.094	0.094
3	15.00	4.2	17.9	0.532	0.	0.105	0.105	0.068	0.068
4	30.00	-3.2	15.1	0.474	0.	0.118	0.118	0.070	0.070
5	50.00	-2.0	14.1	0.448	0.	0.078	0.078	0.041	0.041
6	70.00	-1.2	12.8	0.438	0.	0.071	0.071	0.032	0.032
7	85.00	0.3	8.9	0.436	0.	-0.017	-0.017	-0.007	-0.007
8	90.00	0.9	5.0	0.462	0.	-0.017	-0.017	-0.007	-0.007
9	95.00	1.6	1.9	0.492	0.	0.014	0.014	0.005	0.005

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(b) 80 Percent design speed; reading 1598

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	38.6	0.2	38.6	0.2	301.1	1.000	11.34	0.991
2	24.547	24.671	35.0	0.0	35.0	0.0	300.3	1.000	11.41	0.991
3	23.876	24.049	34.0	-0.7	34.0	-0.7	300.1	0.999	11.44	0.992
4	21.847	22.222	34.3	-1.7	34.3	-1.7	298.9	1.000	11.44	0.995
5	19.164	19.827	36.8	-1.4	36.8	-1.4	297.8	0.999	11.34	0.995
6	16.502	17.465	38.3	0.6	38.3	0.6	296.6	1.000	11.21	0.993
7	14.519	15.682	41.1	-2.1	41.1	-2.1	295.4	1.001	10.98	0.998
8	13.858	15.070	42.0	-3.7	42.0	-3.7	295.0	1.001	10.91	1.001
9	13.200	14.448	42.6	-7.3	42.6	-7.3	295.1	1.001	10.92	0.997

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	124.2	113.3	124.2	113.3	97.1	113.3	77.4	0.3	0.	0.
2	129.7	117.0	129.7	117.0	106.2	117.0	74.4	0.0	0.	0.
3	133.1	119.9	133.1	119.9	110.3	119.9	74.5	-1.6	0.	0.
4	136.4	124.3	136.4	124.3	112.7	124.3	76.9	-3.6	0.	0.
5	136.1	121.6	136.1	121.6	109.1	121.6	81.5	-3.1	0.	0.
6	134.2	116.0	134.2	116.0	105.3	116.0	83.2	1.3	0.	0.
7	125.8	106.1	125.8	106.1	94.8	106.0	82.7	-3.9	0.	0.
8	122.4	103.9	122.4	103.9	91.0	103.7	81.9	-6.8	0.	0.
9	123.9	102.1	123.9	102.1	91.3	101.3	83.8	-13.0	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.362	0.329	0.362	0.329	0.283	0.329	1.167
2	0.379	0.341	0.379	0.341	0.310	0.341	1.102
3	0.389	0.350	0.389	0.350	0.322	0.350	1.087
4	0.400	0.363	0.400	0.363	0.330	0.363	1.102
5	0.400	0.356	0.400	0.356	0.320	0.356	1.115
6	0.395	0.340	0.395	0.340	0.310	0.340	1.102
7	0.370	0.311	0.370	0.311	0.279	0.310	1.118
8	0.360	0.304	0.360	0.304	0.268	0.304	1.139
9	0.365	0.299	0.365	0.299	0.269	0.297	1.109

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-1.9	15.8	0.511	0.	0.101	0.101	0.069	0.069
2	10.00	-5.5	15.3	0.478	0.	0.100	0.100	0.067	0.067
3	15.00	-6.6	14.2	0.467	0.	0.084	0.084	0.054	0.054
4	30.00	-6.7	12.4	0.437	0.	0.045	0.045	0.026	0.026
5	50.00	-4.7	11.6	0.428	0.	0.045	0.045	0.024	0.024
6	70.00	-3.5	12.3	0.408	0.	0.069	0.069	0.032	0.032
7	85.00	-1.1	8.8	0.427	0.	0.025	0.025	0.010	0.010
8	90.00	-0.3	6.9	0.424	0.	-0.011	-0.011	-0.004	-0.004
9	95.00	0.2	3.1	0.458	0.	0.032	0.032	0.012	0.012

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(c) 80 Percent design speed; reading 1600

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	24.4	-4.6	24.4	-4.6	298.9	0.999	11.27	0.977
2	24.547	24.671	23.4	-3.7	23.4	-3.7	298.7	0.999	11.35	0.984
3	23.876	24.049	23.9	-3.4	23.9	-3.4	298.5	0.999	11.33	0.990
4	21.847	22.222	26.2	-4.4	26.2	-4.4	297.7	1.000	11.33	0.995
5	19.164	19.827	26.0	-4.4	26.0	-4.4	297.6	1.000	11.32	0.996
6	16.502	17.465	28.9	-4.1	28.9	-4.1	297.0	1.000	11.23	1.001
7	14.519	15.682	30.9	-2.5	30.9	-2.5	296.1	1.001	11.14	0.998
8	13.858	15.070	33.5	-3.4	33.5	-3.4	295.5	1.001	11.02	0.995
9	13.200	14.448	35.3	-4.1	35.3	-4.1	294.9	1.001	10.82	1.001

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	143.0	134.2	143.0	134.2	130.3	133.8	59.0	-10.7	0.	0.
2	151.3	141.9	151.3	141.9	138.9	141.6	60.0	-9.1	0.	0.
3	152.7	144.6	152.7	144.6	139.6	144.3	61.9	-8.7	0.	0.
4	155.8	148.9	155.8	148.9	139.8	148.4	68.8	-11.4	0.	0.
5	156.0	149.4	156.0	149.4	140.2	149.0	68.4	-11.4	0.	0.
6	154.4	151.3	154.4	151.3	135.2	150.9	74.6	-10.8	0.	0.
7	153.0	150.1	153.0	150.1	131.3	150.0	78.6	-6.5	0.	0.
8	148.6	144.0	148.6	144.0	124.0	143.7	81.9	-8.5	0.	0.
9	140.5	139.6	140.5	139.6	114.6	139.3	81.2	-10.0	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.420	0.393	0.420	0.393	0.383	0.392	1.027
2	0.445	0.417	0.445	0.417	0.409	0.416	1.020
3	0.450	0.425	0.450	0.425	0.411	0.424	1.034
4	0.460	0.439	0.460	0.439	0.413	0.437	1.062
5	0.460	0.440	0.460	0.440	0.414	0.439	1.063
6	0.456	0.446	0.456	0.446	0.399	0.445	1.116
7	0.453	0.444	0.453	0.444	0.389	0.443	1.142
8	0.439	0.425	0.439	0.425	0.367	0.424	1.159
9	0.415	0.412	0.415	0.412	0.339	0.411	1.215

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-16.1	11.1	0.394	0.	0.199	0.199	0.135	0.135
2	10.00	-17.2	11.6	0.365	0.	0.128	0.128	0.085	0.085
3	15.00	-16.7	11.5	0.352	0.	0.078	0.078	0.050	0.050
4	30.00	-14.8	9.7	0.348	0.	0.038	0.038	0.022	0.022
5	50.00	-15.4	8.7	0.308	0.	0.029	0.029	0.015	0.015
6	70.00	-12.9	7.6	0.269	0.	-0.005	-0.005	-0.002	-0.002
7	85.00	-11.3	8.5	0.238	0.	0.018	0.018	0.007	0.007
8	90.00	-8.9	7.3	0.260	0.	0.043	0.043	0.017	0.017
9	95.00	-7.1	6.3	0.239	0.	-0.013	-0.013	-0.005	-0.005

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(d) 80 Percent design speed; reading 1606

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	16.2	-6.9	16.2	-6.9	297.4	0.998	10.90	0.958
2	24.547	24.671	15.5	-5.6	15.5	-5.6	297.6	0.998	11.09	0.967
3	23.876	24.049	15.9	-5.5	15.9	-5.5	297.5	0.999	11.12	0.972
4	21.847	22.222	17.9	-5.4	17.9	-5.4	297.1	0.999	11.19	0.977
5	19.164	19.827	22.0	-4.1	22.0	-4.1	296.9	0.999	11.20	0.985
6	16.502	17.465	24.2	-3.6	24.2	-3.6	296.5	1.000	11.15	0.992
7	14.519	15.682	24.7	-4.1	24.7	-4.1	295.2	1.001	10.90	0.990
8	13.858	15.070	25.7	-5.9	25.7	-5.9	294.4	1.001	10.61	0.990
9	13.200	14.448	26.9	-6.7	26.9	-6.7	294.1	1.001	10.44	0.988

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	173.3	172.5	173.3	172.5	166.4	171.2	48.2	-20.6	0.	0.
2	184.9	184.7	184.9	184.7	178.2	183.8	49.6	-18.1	0.	0.
3	188.6	188.5	188.6	188.5	181.3	187.6	51.7	-18.1	0.	0.
4	194.8	195.8	194.8	195.8	185.3	194.9	60.0	-18.5	0.	0.
5	198.3	204.5	198.3	204.5	183.9	203.9	74.3	-14.7	0.	0.
6	198.5	212.3	198.5	212.3	181.1	211.9	81.4	-13.2	0.	0.
7	189.8	210.9	189.8	210.9	172.4	210.4	79.5	-15.2	0.	0.
8	177.8	201.4	177.8	201.4	160.2	200.3	77.3	-20.8	0.	0.
9	169.0	194.0	169.0	194.0	150.8	192.7	76.4	-22.5	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.514	0.512	0.514	0.512	0.494	0.509	1.029
2	0.551	0.550	0.551	0.550	0.531	0.548	1.031
3	0.562	0.563	0.562	0.563	0.541	0.560	1.034
4	0.583	0.586	0.583	0.586	0.554	0.583	1.052
5	0.594	0.614	0.594	0.614	0.551	0.612	1.109
6	0.595	0.640	0.595	0.640	0.543	0.639	1.170
7	0.569	0.636	0.569	0.636	0.517	0.635	1.220
8	0.531	0.606	0.531	0.606	0.479	0.603	1.251
9	0.504	0.583	0.504	0.583	0.450	0.579	1.278

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-24.3	8.8	0.276	0.	0.257	0.257	0.174	0.174
2	10.00	-25.0	9.7	0.244	0.	0.178	0.178	0.118	0.118
3	15.00	-24.7	9.5	0.240	0.	0.143	0.143	0.092	0.092
4	30.00	-23.1	8.6	0.233	0.	0.111	0.111	0.066	0.066
5	50.00	-19.4	8.9	0.202	0.	0.069	0.069	0.036	0.036
6	70.00	-17.6	8.2	0.145	0.	0.039	0.039	0.018	0.018
7	85.00	-17.4	6.8	0.087	0.	0.050	0.050	0.020	0.020
8	90.00	-16.5	4.8	0.077	0.	0.055	0.055	0.021	0.021
9	95.00	-15.5	3.8	0.065	0.	0.073	0.073	0.027	0.027

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(e) 90 Percent design speed; reading 1588

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	48.0	2.6	48.0	2.6	307.1	0.995	11.76	0.986
2	24.547	24.671	42.2	2.4	42.2	2.4	305.4	0.998	11.80	0.987
3	23.876	24.049	40.0	1.3	40.0	1.3	305.0	0.997	11.83	0.989
4	21.847	22.222	36.7	-0.1	36.7	-0.1	303.0	0.998	11.91	0.986
5	19.164	19.827	39.3	-0.2	39.3	-0.2	300.9	0.999	11.73	0.995
6	16.502	17.465	40.3	0.5	40.3	0.5	299.2	1.000	11.55	0.989
7	14.519	15.682	42.9	-3.0	42.9	-3.0	297.6	1.003	11.23	1.001
8	13.858	15.070	43.3	-6.5	43.3	-6.5	297.4	1.002	11.17	1.002
9	13.200	14.448	44.3	-9.5	44.3	-9.5	297.3	1.003	11.18	0.999

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	137.3	122.1	137.3	122.1	92.0	122.0	102.0	5.5	0.	0.
2	141.6	125.6	141.6	125.6	104.9	125.5	95.0	5.3	0.	0.
3	145.3	129.1	145.3	129.1	111.2	129.1	93.5	3.0	0.	0.
4	153.1	134.0	153.1	134.0	122.8	134.0	91.6	-0.2	0.	0.
5	149.3	132.7	149.3	132.7	115.5	132.7	94.7	-0.5	0.	0.
6	148.0	124.1	148.0	124.1	112.9	124.1	95.7	1.1	0.	0.
7	137.6	116.2	137.6	116.2	100.9	116.0	93.6	-6.0	0.	0.
8	135.9	112.8	135.9	112.8	98.9	112.1	93.2	-12.8	0.	0.
9	136.8	110.4	136.8	110.4	97.9	108.9	95.6	-18.2	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.397	0.353	0.397	0.353	0.266	0.352	1.326
2	0.411	0.364	0.411	0.364	0.305	0.363	1.196
3	0.422	0.374	0.422	0.374	0.323	0.374	1.160
4	0.448	0.390	0.448	0.390	0.359	0.390	1.092
5	0.438	0.387	0.438	0.387	0.339	0.387	1.149
6	0.435	0.362	0.435	0.362	0.332	0.362	1.099
7	0.404	0.339	0.404	0.339	0.296	0.339	1.151
8	0.399	0.330	0.399	0.330	0.291	0.327	1.133
9	0.402	0.322	0.402	0.322	0.288	0.318	1.113

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	7.5	18.2	0.590	0.	0.136	0.136	0.093	0.093
2	10.00	1.6	17.7	0.533	0.	0.123	0.123	0.081	0.081
3	15.00	-0.6	16.3	0.513	0.	0.099	0.099	0.064	0.064
4	30.00	-4.3	13.9	0.478	0.	0.109	0.109	0.065	0.065
5	50.00	-2.1	12.8	0.441	0.	0.042	0.042	0.022	0.022
6	70.00	-1.6	12.2	0.446	0	0.088	0.088	0.040	0.040
7	85.00	0.7	8.0	0.440	0.	-0.012	-0.012	-0.005	-0.005
8	90.00	1.0	4.2	0.465	0.	-0.018	-0.018	-0.007	-0.007
9	95.00	1.9	1.0	0.493	0.	0.009	0.009	0.003	0.003

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(f) 90 Percent design speed; reading 1594

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	38.2	-0.8	38.2	-0.8	304.8	0.998	11.71	0.990
2	24.547	24.671	34.6	-0.6	34.6	-0.6	304.1	0.998	11.80	0.989
3	23.876	24.049	33.5	-1.2	33.5	-1.2	303.5	0.998	11.85	0.990
4	21.847	22.222	33.9	-1.7	33.9	-1.7	302.1	0.999	11.84	0.994
5	19.164	19.827	37.0	-1.5	37.0	-1.5	300.5	0.999	11.69	0.996
6	16.502	17.465	38.3	0.4	38.3	0.4	298.9	1.000	11.54	0.991
7	14.519	15.682	41.2	-2.4	41.2	-2.4	297.6	1.002	11.24	0.997
8	13.858	15.070	42.3	-4.9	42.3	-4.9	297.3	1.002	11.15	1.001
9	13.200	14.448	42.9	-8.0	42.9	-8.0	297.2	1.001	11.18	0.995

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	141.4	128.5	141.4	128.5	111.1	128.5	87.5	-1.7	0.	0.
2	147.9	133.8	147.9	133.8	121.8	133.8	84.0	-1.5	0.	0.
3	152.1	137.1	152.1	137.1	126.9	137.1	83.9	-2.8	0.	0.
4	155.9	141.5	155.9	141.5	129.4	141.4	87.1	-4.2	0.	0.
5	153.6	138.2	153.6	138.2	122.7	138.2	92.4	-3.7	0.	0.
6	153.1	131.4	153.1	131.4	120.2	131.4	94.8	0.9	0.	0.
7	143.8	123.0	143.8	123.0	108.1	122.9	94.8	-5.1	0.	0.
8	139.7	120.1	139.7	120.1	103.4	119.7	94.0	-10.4	0.	0.
9	141.8	117.9	141.8	117.9	103.8	116.8	96.5	-16.4	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.411	0.373	0.411	0.373	0.323	0.373	1.157
2	0.431	0.389	0.431	0.389	0.355	0.389	1.099
3	0.444	0.399	0.444	0.399	0.371	0.399	1.080
4	0.457	0.413	0.457	0.413	0.379	0.413	1.094
5	0.451	0.404	0.451	0.404	0.360	0.404	1.126
6	0.451	0.385	0.451	0.385	0.354	0.385	1.093
7	0.423	0.360	0.423	0.360	0.318	0.360	1.137
8	0.411	0.351	0.411	0.351	0.304	0.350	1.157
9	0.417	0.345	0.417	0.345	0.306	0.342	1.125

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-2.2	14.9	0.521	0.	0.096	0.096	0.065	0.065
2	10.00	-5.9	14.7	0.478	0.	0.094	0.094	0.062	0.062
3	15.00	-7.1	13.8	0.466	0.	0.079	0.079	0.051	0.051
4	30.00	-7.1	12.3	0.438	0.	0.043	0.043	0.026	0.026
5	50.00	-4.4	11.5	0.424	0.	0.034	0.034	0.018	0.018
6	70.00	-3.6	12.1	0.414	0.	0.072	0.072	0.033	0.033
7	85.00	-1.0	8.6	0.417	0.	0.026	0.026	0.011	0.011
8	90.00	-0.0	5.7	0.422	0.	-0.008	-0.008	-0.003	-0.003
9	95.00	0.5	2.4	0.456	0.	0.040	0.040	0.015	0.015

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(g) 90 Percent design speed; reading 1595

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	31.3	-2.9	31.3	-2.9	303.6	0.999	11.64	0.987
2	24.547	24.671	29.0	-2.6	29.0	-2.6	303.0	0.998	11.78	0.984
3	23.876	24.049	28.9	-2.7	28.9	-2.7	302.7	0.998	11.82	0.988
4	21.847	22.222	30.8	-3.0	30.8	-3.0	301.5	0.999	11.80	0.994
5	19.164	19.827	33.7	-2.4	33.7	-2.4	300.4	0.999	11.68	0.995
6	16.502	17.465	35.8	-0.8	35.8	-0.8	298.9	1.000	11.52	0.992
7	14.519	15.682	38.5	-1.9	38.5	-1.9	297.7	1.001	11.27	0.998
8	13.858	15.070	40.2	-4.0	40.2	-4.0	297.2	1.002	11.11	1.004
9	13.200	14.448	40.5	-7.4	40.5	-7.4	297.1	1.001	11.10	0.997

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	147.7	137.4	147.7	137.4	126.2	137.2	76.8	-6.9	0.	0.
2	156.6	142.3	156.6	142.3	137.0	142.2	75.9	-6.4	0.	0.
3	160.5	146.6	160.5	146.6	140.6	146.4	77.5	-6.8	0.	0.
4	162.9	150.9	162.9	150.9	139.9	150.7	83.4	-7.8	0.	0.
5	163.3	149.5	163.3	149.5	135.9	149.4	90.6	-6.3	0.	0.
6	160.8	144.6	160.8	144.6	130.4	144.6	94.1	-1.9	0.	0.
7	153.4	139.0	153.4	139.0	120.0	139.0	95.5	-4.5	0.	0.
8	146.6	134.4	146.6	134.4	112.1	134.1	94.5	-9.4	0.	0.
9	147.1	129.4	147.1	129.4	111.7	128.4	95.6	-16.6	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.431	0.400	0.431	0.400	0.368	0.399	1.088
2	0.458	0.415	0.458	0.415	0.401	0.415	1.038
3	0.470	0.428	0.470	0.428	0.412	0.428	1.042
4	0.479	0.442	0.479	0.442	0.411	0.442	1.077
5	0.481	0.439	0.481	0.439	0.400	0.438	1.099
6	0.474	0.425	0.474	0.425	0.385	0.425	1.109
7	0.452	0.408	0.452	0.408	0.354	0.408	1.158
8	0.432	0.395	0.432	0.395	0.330	0.394	1.196
9	0.434	0.380	0.434	0.380	0.329	0.377	1.149

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-9.1	12.8	0.456	0.	0.108	0.108	0.073	0.073
2	10.00	-11.6	12.7	0.440	0.	0.122	0.122	0.081	0.081
3	15.00	-11.7	12.3	0.425	0.	0.088	0.088	0.057	0.057
4	30.00	-10.2	11.1	0.404	0.	0.042	0.042	0.025	0.025
5	50.00	-7.8	10.6	0.392	0.	0.035	0.035	0.018	0.018
6	70.00	-6.0	11.0	0.367	0.	0.053	0.053	0.025	0.025
7	85.00	-3.7	9.1	0.350	0.	0.019	0.019	0.008	0.008
8	90.00	-2.2	6.7	0.350	0.	-0.029	-0.029	-0.011	-0.011
9	95.00	-1.9	3.0	0.395	0.	0.028	0.028	0.010	0.010

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(h) 90 Percent design speed; reading 1596

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	25.6	-4.6	25.6	-4.6	302.4	0.998	11.63	0.974
2	24.547	24.671	24.2	-3.6	24.2	-3.6	302.0	0.998	11.75	0.979
3	23.876	24.049	24.7	-3.5	24.7	-3.5	301.9	0.998	11.76	0.985
4	21.847	22.222	27.0	-4.1	27.0	-4.1	300.9	1.000	11.70	0.995
5	19.164	19.827	30.0	-4.0	30.0	-4.0	299.6	1.000	11.58	1.000
6	16.502	17.465	32.0	-2.3	32.0	-2.3	298.5	1.000	11.47	0.996
7	14.519	15.682	34.4	-3.6	34.4	-3.6	297.7	1.000	11.28	0.994
8	13.858	15.070	36.3	-4.2	36.3	-4.2	296.9	1.001	11.05	1.002
9	13.200	14.448	36.7	-4.8	36.7	-4.8	296.9	1.001	11.02	0.996

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	161.1	150.5	161.1	150.5	145.4	150.0	69.6	-12.2	0.	0.
2	170.0	158.2	170.0	158.2	155.1	157.9	69.5	-9.8	0.	0.
3	172.3	161.5	172.3	161.5	156.5	161.2	72.1	-9.7	0.	0.
4	174.6	165.7	174.6	165.7	155.6	165.3	79.2	-11.9	0.	0.
5	174.4	167.1	174.4	167.1	151.0	166.7	87.2	-11.6	0.	0.
6	173.2	165.6	173.2	165.6	146.9	165.4	91.7	-6.8	0.	0.
7	168.8	159.9	168.8	159.9	139.2	159.5	95.5	-10.1	0.	0.
8	159.2	154.4	159.2	154.4	128.3	154.0	94.2	-11.4	0.	0.
9	157.7	150.0	157.7	150.0	126.5	149.5	94.2	-12.7	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.472	0.441	0.472	0.441	0.426	0.439	1.032
2	0.500	0.464	0.500	0.464	0.456	0.463	1.018
3	0.507	0.474	0.507	0.474	0.461	0.474	1.030
4	0.515	0.488	0.515	0.488	0.459	0.487	1.062
5	0.516	0.493	0.516	0.493	0.447	0.492	1.104
6	0.513	0.489	0.513	0.489	0.435	0.489	1.126
7	0.500	0.472	0.500	0.472	0.412	0.471	1.146
8	0.471	0.456	0.471	0.456	0.380	0.455	1.200
9	0.466	0.443	0.466	0.443	0.374	0.441	1.182

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-14.9	11.0	0.412	0.	0.181	0.181	0.123	0.123
2	10.00	-16.4	11.8	0.378	0.	0.136	0.136	0.090	0.090
3	15.00	-15.9	11.5	0.369	0.	0.092	0.092	0.059	0.059
4	30.00	-14.0	9.9	0.359	0.	0.033	0.033	0.019	0.019
5	50.00	-11.4	9.0	0.336	0.	-0.002	-0.002	-0.001	-0.001
6	70.00	-9.9	9.4	0.298	0.	0.027	0.027	0.012	0.012
7	85.00	-7.8	7.3	0.300	0.	0.035	0.035	0.014	0.014
8	90.00	-6.0	6.5	0.280	0.	-0.017	-0.017	-0.007	-0.007
9	95.00	-5.7	5.6	0.293	0.	0.030	0.030	0.011	0.011

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(i) 90 Percent design speed; reading 1604

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	18.6	-6.1	18.6	-6.1	300.7	0.999	11.23	0.956
2	24.547	24.671	17.9	-5.2	17.9	-5.2	300.9	0.998	11.51	0.957
3	23.876	24.049	18.3	-5.2	18.3	-5.2	300.9	0.998	11.53	0.968
4	21.847	22.222	20.2	-5.1	20.2	-5.1	300.5	0.998	11.54	0.976
5	19.164	19.827	23.6	-4.2	23.6	-4.2	299.7	0.999	11.49	0.986
6	16.502	17.465	25.4	-3.6	25.4	-3.6	298.8	1.001	11.37	0.992
7	14.519	15.682	25.7	-4.5	25.7	-4.5	297.0	1.002	11.01	0.990
8	13.858	15.070	27.1	-6.4	27.1	-6.4	296.0	1.002	10.71	0.989
9	13.200	14.448	28.6	-7.2	28.6	-7.2	295.4	1.002	10.50	0.990

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	186.4	185.5	186.4	185.5	176.6	184.5	59.6	-19.8	0.	0.
2	200.6	196.4	200.6	196.4	190.9	195.6	61.6	-17.9	0.	0.
3	204.0	201.5	204.0	201.5	193.7	200.7	64.0	-18.4	0.	0.
4	209.3	209.2	209.3	209.2	196.5	208.3	72.1	-18.6	0.	0.
5	212.1	216.4	212.1	216.4	194.4	215.8	84.7	-16.0	0.	0.
6	211.5	222.7	211.5	222.7	191.1	222.3	90.5	-14.1	0.	0.
7	199.6	219.6	199.6	219.6	179.9	218.9	86.5	-17.2	0.	0.
8	187.8	209.6	187.8	209.6	167.2	208.2	85.6	-23.5	0.	0.
9	178.5	201.9	178.5	201.9	156.7	200.3	85.4	-25.4	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.552	0.550	0.552	0.550	0.523	0.547	1.045
2	0.597	0.585	0.597	0.585	0.568	0.582	1.024
3	0.608	0.601	0.608	0.601	0.577	0.598	1.036
4	0.625	0.626	0.625	0.626	0.587	0.623	1.060
5	0.635	0.650	0.635	0.650	0.582	0.648	1.110
6	0.634	0.671	0.634	0.671	0.573	0.669	1.163
7	0.598	0.662	0.598	0.662	0.539	0.660	1.217
8	0.562	0.631	0.562	0.631	0.500	0.627	1.246
9	0.532	0.606	0.532	0.606	0.468	0.602	1.278

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-21.8	9.5	0.295	0.	0.236	0.236	0.160	0.160
2	10.00	-22.7	10.1	0.284	0.	0.200	0.200	0.132	0.132
3	15.00	-22.3	9.7	0.273	0.	0.145	0.145	0.094	0.094
4	30.00	-20.8	8.9	0.257	0.	0.102	0.102	0.060	0.060
5	50.00	-17.9	8.8	0.226	0.	0.059	0.059	0.031	0.031
6	70.00	-16.5	8.1	0.169	0.	0.032	0.032	0.015	0.015
7	85.00	-16.5	6.5	0.106	0.	0.048	0.048	0.020	0.020
8	90.00	-15.2	4.3	0.105	0.	0.055	0.055	0.022	0.022
9	95.00	-13.8	3.2	0.095	0.	0.058	0.058	0.021	0.021

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(j) 100 Percent design speed; reading 1592

RP	RADII IN	RADII OUT	ABS BETAM IN	ABS BETAM OUT	REL BETAM IN	REL BETAM OUT	TOTAL TEMP IN	TOTAL TEMP RATIO	TOTAL PRESS IN	TOTAL PRESS RATIO
1	25.230	25.298	53.1	4.3	53.1	4.3	312.7	0.991	12.26	0.974
2	24.547	24.671	46.7	4.6	46.7	4.6	310.4	0.995	12.22	0.979
3	23.876	24.049	43.7	3.2	43.7	3.2	309.7	0.995	12.22	0.981
4	21.847	22.222	37.4	2.1	37.4	2.1	306.4	0.999	12.33	0.978
5	19.164	19.827	39.4	1.4	39.4	1.4	304.1	0.999	12.17	0.990
6	16.502	17.465	40.8	1.5	40.8	1.5	301.9	1.000	11.91	0.989
7	14.519	15.682	43.1	-3.2	43.1	-3.2	299.6	1.003	11.51	1.000
8	13.858	15.070	43.7	-6.7	43.7	-6.7	299.5	1.002	11.46	1.000
9	13.200	14.448	44.3	-8.9	44.3	-8.9	298.9	1.003	11.44	0.998

RP	ABS VEL IN	ABS VEL OUT	REL VEL IN	REL VEL OUT	MERID VEL IN	MERID VEL OUT	TANG VEL IN	TANG VEL OUT	WHEEL SPEED IN	WHEEL SPEED OUT
1	155.0	137.2	155.0	137.2	93.1	136.8	123.9	10.2	0.	0.
2	156.3	139.3	156.3	139.3	107.1	138.8	113.7	11.0	0.	0.
3	159.3	141.5	159.3	141.5	115.2	141.3	110.1	7.8	0.	0.
4	168.0	146.2	168.0	146.2	133.5	146.1	102.0	5.3	0.	0.
5	166.7	147.7	166.7	147.7	128.8	147.7	105.9	3.7	0.	0.
6	163.5	138.8	163.5	138.8	123.9	138.8	106.7	3.6	0.	0.
7	152.3	127.8	152.3	127.8	111.2	127.6	104.1	-7.2	0.	0.
8	151.2	125.0	151.2	125.0	109.3	124.2	104.5	-14.6	0.	0.
9	150.8	121.7	150.8	121.7	107.9	120.2	105.4	-18.9	0.	0.

RP	ABS MACH NO IN	ABS MACH NO OUT	REL MACH NO IN	REL MACH NO OUT	MERID MACH NO IN	MERID MACH NO OUT	MERID VEL R
1	0.446	0.395	0.446	0.395	0.268	0.394	1.470
2	0.451	0.402	0.451	0.402	0.309	0.400	1.296
3	0.461	0.409	0.461	0.409	0.333	0.408	1.227
4	0.490	0.425	0.490	0.425	0.390	0.424	1.095
5	0.488	0.430	0.488	0.430	0.377	0.430	1.147
6	0.480	0.405	0.480	0.405	0.364	0.405	1.120
7	0.448	0.373	0.448	0.373	0.327	0.372	1.148
8	0.444	0.365	0.444	0.365	0.321	0.362	1.136
9	0.444	0.355	0.444	0.355	0.317	0.351	1.115

RP	PERCENT SPAN	INCIDENCE MEAN	DEV	D-FACT	EFF	LOSS COEFF TOT	LOSS COEFF PROF	LOSS PARAM TOT	LOSS PARAM PROF
1	5.00	12.6	19.9	0.615	0.	0.201	0.201	0.136	0.136
2	10.00	6.2	19.9	0.544	0.	0.160	0.160	0.106	0.106
3	15.00	3.1	18.1	0.525	0.	0.138	0.138	0.089	0.089
4	30.00	-3.6	16.1	0.468	0.	0.148	0.148	0.088	0.088
5	50.00	-2.0	14.5	0.431	0.	0.067	0.067	0.035	0.035
6	70.00	-1.1	13.2	0.431	0.	0.074	0.074	0.034	0.034
7	85.00	0.9	7.7	0.448	0.	0.001	0.001	0.000	0.000
8	90.00	1.4	4.0	0.471	0.	0.002	0.002	0.001	0.001
9	95.00	1.9	1.5	0.491	0.	0.013	0.013	0.005	0.005

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(k) 100 Percent design speed; reading 1614

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	41.1	-0.5	41.1	-0.5	310.1	0.996	12.12	0.987
2	24.547	24.671	38.4	-0.1	38.4	-0.1	308.6	0.998	12.27	0.985
3	23.876	24.049	37.1	-1.4	37.1	-1.4	308.0	0.998	12.33	0.985
4	21.847	22.222	36.1	-1.4	36.1	-1.4	306.7	0.997	12.40	0.987
5	19.164	19.827	37.7	-1.7	37.7	-1.7	304.1	0.999	12.17	0.992
6	16.502	17.465	39.1	0.3	39.1	0.3	302.1	1.000	11.94	0.987
7	14.519	15.682	41.8	-3.1	41.8	-3.1	300.1	1.002	11.54	0.997
8	13.858	15.070	42.5	-5.3	42.5	-5.3	299.8	1.001	11.44	1.000
9	13.200	14.448	43.0	-8.9	43.0	-8.9	299.6	1.002	11.45	0.996

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	155.0	139.1	155.0	139.1	116.7	139.1	101.9	-1.2	0.	0.
2	163.6	145.5	163.6	145.5	128.1	145.5	101.7	-0.3	0.	0.
3	168.0	148.6	168.0	148.6	134.0	148.5	101.3	-3.7	0.	0.
4	175.4	155.5	175.4	155.5	141.7	155.4	103.3	-3.8	0.	0.
5	171.7	151.6	171.7	151.6	135.8	151.6	105.0	-4.6	0.	0.
6	169.8	143.7	169.8	143.7	131.7	143.7	107.1	0.6	0.	0.
7	158.7	133.3	158.7	133.3	118.2	133.1	105.9	-7.3	0.	0.
8	155.8	130.3	155.8	130.3	114.8	129.8	105.4	-12.1	0.	0.
9	156.7	127.4	156.7	127.4	114.6	125.9	106.9	-19.6	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.448	0.401	0.448	0.401	0.337	0.401	1.191
2	0.475	0.421	0.475	0.421	0.372	0.421	1.135
3	0.489	0.431	0.489	0.431	0.390	0.430	1.108
4	0.513	0.453	0.513	0.453	0.414	0.452	1.096
5	0.503	0.442	0.503	0.442	0.398	0.442	1.116
6	0.499	0.420	0.499	0.420	0.387	0.420	1.091
7	0.467	0.389	0.467	0.389	0.348	0.389	1.126
8	0.458	0.381	0.458	0.381	0.338	0.379	1.130
9	0.461	0.372	0.461	0.372	0.337	0.367	1.098

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	0.7	15.1	0.556	0.	0.098	0.098	0.067	0.067
2	10.00	-2.1	15.2	0.524	0.	0.101	0.101	0.067	0.067
3	15.00	-3.5	13.6	0.518	0.	0.098	0.098	0.063	0.063
4	30.00	-4.9	12.7	0.474	0.	0.076	0.076	0.045	0.045
5	50.00	-3.7	11.3	0.447	0.	0.050	0.050	0.026	0.026
6	70.00	-2.7	12.0	0.433	0.	0.081	0.081	0.037	0.037
7	85.00	-0.4	7.8	0.441	0.	0.023	0.023	0.009	0.009
8	90.00	0.2	5.4	0.448	0.	-0.003	-0.003	-0.001	-0.001
9	95.00	0.6	1.6	0.479	0.	0.027	0.027	0.010	0.010

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(ℓ) 100 Percent design speed; reading 1613

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	33.6	-2.6	33.6	-2.6	307.6	0.999	12.06	0.986
2	24.547	24.671	31.8	-2.3	31.8	-2.3	307.3	0.998	12.24	0.981
3	23.876	24.049	31.4	-2.2	31.4	-2.2	307.2	0.997	12.31	0.983
4	21.847	22.222	32.1	-2.7	32.1	-2.7	305.4	0.999	12.28	0.993
5	19.164	19.827	35.2	-2.3	35.2	-2.3	303.7	0.998	12.12	0.985
6	16.502	17.465	36.8	-0.5	36.8	-0.5	302.0	1.000	11.93	0.989
7	14.519	15.682	39.7	-3.1	39.7	-3.1	300.5	1.001	11.54	0.998
8	13.858	15.070	41.2	-5.6	41.2	-5.6	299.7	1.002	11.38	1.004
9	13.200	14.448	41.5	-8.3	41.5	-8.3	299.6	1.001	11.40	0.997

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	162.7	148.2	162.7	148.2	135.5	148.1	90.1	-6.8	0.	0.
2	172.3	154.0	172.3	154.0	146.4	153.9	90.8	-6.2	0.	0.
3	176.7	158.2	176.7	158.2	150.8	158.1	92.1	-6.0	0.	0.
4	179.5	164.4	179.5	164.4	152.1	164.3	95.3	-7.9	0.	0.
5	179.0	157.7	179.0	157.7	146.3	157.6	103.1	-6.3	0.	0.
6	177.8	156.2	177.8	156.2	142.4	156.2	106.5	-1.3	0.	0.
7	167.3	148.2	167.3	148.2	128.7	147.9	106.8	-7.9	0.	0.
8	161.5	143.4	161.5	143.4	121.6	142.7	106.3	-14.1	0.	0.
9	162.8	140.1	162.8	140.1	121.9	138.7	107.9	-20.1	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.473	0.430	0.473	0.430	0.394	0.429	1.093
2	0.502	0.447	0.502	0.447	0.427	0.447	1.051
3	0.516	0.460	0.516	0.460	0.440	0.460	1.049
4	0.526	0.480	0.526	0.480	0.446	0.480	1.080
5	0.526	0.461	0.526	0.461	0.430	0.461	1.077
6	0.524	0.458	0.524	0.458	0.420	0.458	1.097
7	0.493	0.434	0.493	0.434	0.379	0.433	1.149
8	0.476	0.420	0.476	0.420	0.358	0.418	1.174
9	0.480	0.410	0.480	0.410	0.359	0.406	1.138

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-6.9	13.0	0.495	0.	0.102	0.102	0.069	0.069
2	10.00	-8.7	13.0	0.479	0.	0.123	0.123	0.082	0.082
3	15.00	-9.2	12.8	0.463	0.	0.103	0.103	0.066	0.066
4	30.00	-8.9	11.3	0.423	0.	0.042	0.042	0.025	0.025
5	50.00	-6.3	10.7	0.436	0.	0.086	0.086	0.045	0.045
6	70.00	-5.0	11.2	0.392	0.	0.063	0.063	0.029	0.029
7	85.00	-2.5	7.9	0.384	0.	0.011	0.011	0.004	0.004
8	90.00	-1.1	5.0	0.394	0.	-0.025	-0.025	-0.010	-0.010
9	95.00	-0.9	2.2	0.423	0.	0.019	0.019	0.007	0.007

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(m) 100 Percent design speed; reading 1611

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	27.9	-4.9	27.9	-4.9	306.6	0.998	12.04	0.971
2	24.547	24.671	26.3	-4.0	26.3	-4.0	306.1	0.998	12.23	0.971
3	23.876	24.049	26.1	-3.7	26.1	-3.7	305.9	0.997	12.26	0.978
4	21.847	22.222	27.9	-3.9	27.9	-3.9	304.7	0.998	12.21	0.988
5	19.164	19.827	30.8	-3.5	30.8	-3.5	303.2	0.999	12.02	0.993
6	16.502	17.465	32.9	-2.3	32.9	-2.3	301.6	0.999	11.84	0.985
7	14.519	15.682	35.8	-4.0	35.8	-4.0	300.4	1.000	11.55	0.981
8	13.858	15.070	37.0	-3.9	37.0	-3.9	299.4	1.001	11.29	0.986
9	13.200	14.448	37.2	-5.7	37.2	-5.7	299.3	1.000	11.25	0.969

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	179.8	165.9	179.8	165.9	158.9	165.3	84.1	-14.0	0.	0.
2	188.9	173.5	188.9	173.5	169.3	173.1	83.7	-12.0	0.	0.
3	192.4	177.6	192.4	177.6	172.7	177.3	84.8	-11.4	0.	0.
4	195.8	182.9	195.8	182.9	173.1	182.4	91.6	-12.4	0.	0.
5	194.2	182.1	194.2	182.1	166.7	181.8	99.5	-11.0	0.	0.
6	192.9	177.3	192.9	177.3	162.0	177.2	104.7	-7.1	0.	0.
7	184.7	169.1	184.7	169.1	149.9	*168.7	107.9	-11.8	0.	0.
8	175.3	160.9	175.3	160.9	140.1	160.5	105.4	-10.8	0.	0.
9	173.6	148.7	173.6	148.7	138.2	147.9	105.0	-14.7	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.526	0.484	0.526	0.484	0.465	0.483	1.041
2	0.555	0.508	0.555	0.508	0.497	0.507	1.022
3	0.566	0.521	0.566	0.521	0.508	0.520	1.026
4	0.578	0.538	0.578	0.538	0.511	0.537	1.054
5	0.574	0.537	0.574	0.537	0.493	0.536	1.090
6	0.572	0.523	0.572	0.523	0.480	0.523	1.094
7	0.547	0.499	0.547	0.499	0.444	0.498	1.126
8	0.519	0.474	0.519	0.474	0.415	0.473	1.146
9	0.514	0.437	0.514	0.437	0.409	0.435	1.071

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-12.6	10.8	0.449	0.	0.170	0.170	0.115	0.115
2	10.00	-14.2	11.3	0.417	0.	0.152	0.152	0.100	0.100
3	15.00	-14.5	11.3	0.399	0.	0.114	0.114	0.073	0.073
4	30.00	-13.1	10.1	0.380	0.	0.060	0.060	0.036	0.036
5	50.00	-10.6	9.6	0.357	0.	0.034	0.034	0.018	0.018
6	70.00	-8.9	9.5	0.340	0.	0.077	0.077	0.035	0.035
7	85.00	-6.4	6.9	0.340	0.	0.106	0.106	0.043	0.043
8	90.00	-5.4	6.8	0.332	0.	0.085	0.085	0.033	0.033
9	95.00	-5.2	4.7	0.392	0.	0.187	0.187	0.069	0.069

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(n) 100 Percent design speed; reading 1603

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	22.0	-5.4	22.0	-5.4	305.2	0.996	11.77	0.955
2	24.547	24.671	20.7	-4.7	20.7	-4.7	304.8	0.997	11.98	0.960
3	23.876	24.049	21.7	-4.7	21.7	-4.7	304.7	0.998	12.01	0.969
4	21.847	22.222	23.7	-4.5	23.7	-4.5	303.6	0.999	11.97	0.986
5	19.164	19.827	26.8	-4.2	26.8	-4.2	302.7	0.999	11.89	0.995
6	16.502	17.465	28.3	-3.6	28.3	-3.6	301.0	1.001	11.71	0.994
7	14.519	15.682	29.9	-4.9	29.9	-4.9	298.5	1.003	11.24	1.000
8	13.858	15.070	31.6	-6.2	31.6	-6.2	297.8	1.003	10.95	1.002
9	13.200	14.448	32.1	-7.0	32.1	-7.0	296.5	1.006	10.67	1.012

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	195.8	185.6	195.8	185.6	181.5	184.8	73.3	-17.5	0.	0.
2	207.0	196.1	207.0	196.1	193.6	195.4	73.1	-16.2	0.	0.
3	210.3	200.4	210.3	200.4	195.4	199.7	77.7	-16.6	0.	0.
4	215.4	210.0	215.4	210.0	197.2	209.3	86.7	-16.6	0.	0.
5	218.7	216.6	218.7	216.6	195.1	216.0	98.7	-15.8	0.	0.
6	216.5	217.3	216.5	217.3	190.6	216.8	102.7	-13.5	0.	0.
7	200.1	210.5	200.1	210.5	173.5	209.7	99.7	-18.0	0.	0.
8	189.7	201.5	189.7	201.5	161.5	200.3	99.5	-21.6	0.	0.
9	179.0	194.7	179.0	194.7	151.6	193.2	95.1	-23.8	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.577	0.547	0.577	0.547	0.535	0.544	1.018
2	0.613	0.580	0.613	0.580	0.574	0.578	1.009
3	0.624	0.593	0.624	0.593	0.580	0.591	1.022
4	0.642	0.624	0.642	0.624	0.587	0.622	1.061
5	0.653	0.647	0.653	0.647	0.583	0.645	1.107
6	0.648	0.650	0.648	0.650	0.571	0.649	1.138
7	0.598	0.630	0.598	0.630	0.519	0.628	1.208
8	0.566	0.602	0.566	0.602	0.482	0.599	1.240
9	0.533	0.581	0.533	0.581	0.452	0.577	1.274

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-18.5	10.2	0.368	0.	0.222	0.222	0.151	0.151
2	10.00	-19.8	10.6	0.339	0.	0.177	0.177	0.117	0.117
3	15.00	-18.9	10.2	0.336	0.	0.133	0.133	0.086	0.086
4	30.00	-17.3	9.5	0.309	0.	0.056	0.056	0.033	0.033
5	50.00	-14.6	8.9	0.281	0.	0.019	0.019	0.010	0.010
6	70.00	-13.5	8.2	0.237	0.	0.024	0.024	0.011	0.011
7	85.00	-12.3	6.0	0.181	0.	0.001	0.001	0.000	0.000
8	90.00	-10.7	4.5	0.180	0.	-0.012	-0.012	-0.005	-0.005
9	95.00	-10.3	3.4	0.153	0.	-0.069	-0.069	-0.025	-0.025

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(o) 110 Percent design speed; reading 1694

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	44.3	2.5	44.3	2.5	315.4	0.994	12.70	0.979
2	24.547	24.671	39.3	2.3	39.3	2.3	314.0	0.997	12.81	0.979
3	23.876	24.049	36.7	1.2	36.7	1.2	312.7	0.996	12.82	0.981
4	21.847	22.222	36.2	0.5	36.2	0.5	310.0	0.998	12.88	0.987
5	19.164	19.827	38.7	0.6	38.7	0.6	307.8	0.996	12.67	0.988
6	16.502	17.465	39.6	1.6	39.6	1.6	305.1	0.998	12.37	0.980
7	14.519	15.682	42.6	-2.4	42.6	-2.4	302.6	1.001	11.83	0.996
8	13.858	15.070	43.3	-5.0	43.3	-5.0	302.3	1.001	11.72	1.003
9	13.200	14.448	43.4	-9.2	43.4	-9.2	301.9	1.002	11.75	0.999

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	171.0	151.8	171.0	151.8	122.3	151.6	119.5	6.5	0.	0.
2	176.8	156.6	176.8	156.6	136.9	156.5	111.9	6.2	0.	0.
3	181.2	159.4	181.2	159.4	145.3	159.3	108.2	3.5	0.	0.
4	188.1	167.1	188.1	167.1	151.9	167.1	111.0	1.6	0.	0.
5	188.1	163.3	188.1	163.3	146.9	163.3	117.5	1.6	0.	0.
6	186.8	152.8	186.8	152.8	144.0	152.8	119.1	4.2	0.	0.
7	174.0	142.7	174.0	142.7	128.0	142.6	117.9	-5.9	0.	0.
8	170.5	141.1	170.5	141.1	124.0	140.6	117.0	-12.3	0.	0.
9	171.6	139.9	171.6	139.9	124.6	138.1	118.0	-22.3	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.492	0.436	0.492	0.436	0.352	0.435	1.240
2	0.511	0.451	0.511	0.451	0.395	0.450	1.143
3	0.525	0.460	0.525	0.460	0.421	0.460	1.096
4	0.549	0.485	0.549	0.485	0.443	0.485	1.100
5	0.551	0.476	0.551	0.476	0.430	0.476	1.112
6	0.550	0.446	0.550	0.446	0.423	0.445	1.061
7	0.512	0.416	0.512	0.416	0.377	0.416	1.114
8	0.501	0.411	0.501	0.411	0.365	0.410	1.134
9	0.505	0.408	0.505	0.408	0.367	0.403	1.108

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	3.9	18.1	0.562	0.	0.140	0.140	0.096	0.096
2	10.00	-1.3	17.6	0.510	0.	0.128	0.128	0.085	0.085
3	15.00	-3.9	16.2	0.493	0.	0.110	0.110	0.071	0.071
4	30.00	-4.8	14.6	0.455	0.	0.072	0.072	0.043	0.043
5	50.00	-2.8	13.6	0.450	0.	0.063	0.063	0.033	0.033
6	70.00	-2.2	13.3	0.455	0.	0.108	0.108	0.049	0.049
7	85.00	0.4	8.6	0.460	0.	0.022	0.022	0.009	0.009
8	90.00	1.0	5.7	0.458	0.	-0.017	-0.017	-0.007	-0.007
9	95.00	1.0	1.3	0.481	0.	0.005	0.005	0.002	0.002

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(p) 110 Percent design speed; reading 1693

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	33.2	-3.1	33.2	-3.1	312.2	0.996	12.52	0.983
2	24.547	24.671	30.3	-2.6	30.3	-2.6	310.9	0.997	12.77	0.978
3	23.876	24.049	29.8	-2.5	29.8	-2.5	310.4	0.997	12.84	0.982
4	21.847	22.222	31.8	-2.5	31.8	-2.5	309.3	0.996	12.84	0.988
5	19.164	19.827	34.8	-2.0	34.8	-2.0	306.9	0.997	12.56	0.993
6	16.502	17.465	36.1	0.0	36.1	0.0	304.9	0.997	12.33	0.978
7	14.519	15.682	38.9	-2.7	38.9	-2.7	302.7	0.999	11.86	0.986
8	13.858	15.070	40.1	-4.2	40.1	-4.2	302.0	1.001	11.61	1.000
9	13.200	14.448	39.9	-7.6	39.9	-7.6	301.7	1.001	11.60	0.993

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	181.7	165.3	181.7	165.3	152.0	165.1	99.6	-8.9	0.	0.
2	192.3	172.3	192.3	172.3	166.1	172.2	96.9	-7.8	0.	0.
3	196.8	176.6	196.8	176.6	170.7	176.4	97.9	-7.8	0.	0.
4	202.8	182.1	202.8	182.1	172.4	181.9	106.7	-7.8	0.	0.
5	200.1	178.9	200.1	178.9	164.2	178.8	114.3	-6.1	0.	0.
6	201.5	172.4	201.5	172.4	162.8	172.4	118.6	0.0	0.	0.
7	191.2	164.5	191.2	164.5	148.8	164.3	120.0	-7.8	0.	0.
8	182.7	161.8	182.7	161.8	139.8	161.4	117.6	-11.9	0.	0.
9	182.3	157.1	182.3	157.1	139.9	155.7	116.9	-20.8	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.527	0.478	0.527	0.478	0.441	0.478	1.086
2	0.561	0.500	0.561	0.500	0.484	0.500	1.037
3	0.575	0.514	0.575	0.514	0.499	0.513	1.033
4	0.595	0.532	0.595	0.532	0.506	0.531	1.055
5	0.589	0.524	0.589	0.524	0.484	0.524	1.089
6	0.596	0.506	0.596	0.506	0.481	0.506	1.058
7	0.565	0.483	0.565	0.483	0.440	0.482	1.104
8	0.539	0.475	0.539	0.475	0.413	0.473	1.154
9	0.539	0.460	0.539	0.460	0.413	0.456	1.113

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-7.2	12.6	0.497	0.	0.098	0.098	0.067	0.067
2	10.00	-10.3	12.7	0.464	0.	0.115	0.115	0.076	0.076
3	15.00	-10.8	12.4	0.449	0.	0.088	0.088	0.057	0.057
4	30.00	-9.2	11.6	0.436	0.	0.056	0.056	0.033	0.033
5	50.00	-6.6	11.1	0.417	0.	0.035	0.035	0.018	0.018
6	70.00	-5.8	11.7	0.407	0.	0.101	0.101	0.046	0.046
7	85.00	-3.3	8.2	0.403	0.	0.074	0.074	0.030	0.030
8	90.00	-2.2	6.5	0.381	0.	-0.002	-0.002	-0.001	-0.001
9	95.00	-2.5	2.8	0.411	0.	0.041	0.041	0.015	0.015

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(q) 110 Percent design speed; reading 1692

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	27.2	-3.6	27.2	-3.6	310.8	0.995	12.31	0.968
2	24.547	24.671	26.3	-3.1	26.3	-3.1	309.6	0.998	12.55	0.967
3	23.876	24.049	26.4	-3.1	26.4	-3.1	309.0	0.998	12.60	0.975
4	21.847	22.222	28.0	-3.0	28.0	-3.0	308.3	0.997	12.59	0.990
5	19.164	19.827	30.3	-2.0	30.3	-2.0	306.3	0.998	12.44	0.997
6	16.502	17.465	30.9	-0.4	30.9	-0.4	304.1	0.999	12.17	0.991
7	14.519	15.682	33.7	-3.5	33.7	-3.5	301.2	1.002	11.52	1.000
8	13.858	15.070	34.9	-4.6	34.9	-4.6	300.2	1.003	11.23	1.013
9	13.200	14.448	34.6	-7.0	34.6	-7.0	299.1	1.007	11.00	1.019

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	201.3	184.9	201.3	184.9	179.0	184.5	92.1	-11.5	0.	0.
2	210.8	191.9	210.8	191.9	189.0	191.6	93.4	-10.4	0.	0.
3	214.3	196.4	214.3	196.4	191.9	196.1	95.4	-10.5	0.	0.
4	220.6	205.4	220.6	205.4	194.8	205.1	103.5	-10.6	0.	0.
5	222.6	209.3	222.6	209.3	192.2	209.2	112.2	-7.3	0.	0.
6	221.5	208.0	221.5	208.0	190.0	208.0	113.9	-1.3	0.	0.
7	203.4	199.6	203.4	199.6	169.3	199.3	112.8	-12.2	0.	0.
8	194.0	195.6	194.0	195.6	159.2	195.0	110.9	-15.6	0.	0.
9	185.9	188.7	185.9	188.7	153.0	187.3	105.6	-22.9	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.589	0.539	0.589	0.539	0.524	0.538	1.031
2	0.620	0.562	0.620	0.562	0.556	0.561	1.014
3	0.632	0.576	0.632	0.576	0.566	0.576	1.022
4	0.653	0.605	0.653	0.605	0.577	0.605	1.053
5	0.662	0.620	0.662	0.620	0.571	0.619	1.088
6	0.661	0.618	0.661	0.618	0.567	0.618	1.095
7	0.606	0.593	0.606	0.593	0.504	0.592	1.177
8	0.577	0.581	0.577	0.581	0.473	0.579	1.225
9	0.552	0.559	0.552	0.559	0.455	0.555	1.224

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-13.2	12.1	0.432	0.	0.153	0.153	0.104	0.104
2	10.00	-14.2	12.2	0.416	0.	0.146	0.146	0.097	0.097
3	15.00	-14.2	11.9	0.402	0.	0.105	0.105	0.068	0.068
4	30.00	-13.0	11.1	0.374	0.	0.038	0.038	0.023	0.023
5	50.00	-11.2	11.0	0.338	0.	0.011	0.011	0.006	0.006
6	70.00	-10.9	11.4	0.293	0.	0.035	0.035	0.016	0.016
7	85.00	-8.5	7.5	0.261	0.	0.001	0.001	0.000	0.000
8	90.00	-7.5	6.1	0.238	0.	-0.066	-0.066	-0.026	-0.026
9	95.00	-7.8	3.4	0.235	0.	-0.101	-0.101	-0.037	-0.037

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(r) 120 Percent design speed; reading 1695

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	45.7	3.5	45.7	3.5	320.8	0.994	13.21	0.977
2	24.547	24.671	39.3	2.1	39.3	2.1	318.0	0.997	13.28	0.978
3	23.876	24.049	37.6	0.9	37.6	0.9	317.0	0.996	13.36	0.977
4	21.847	22.222	36.3	1.0	36.3	1.0	314.1	0.998	13.46	0.982
5	19.164	19.827	39.0	1.2	39.0	1.2	311.9	0.995	13.23	0.987
6	16.502	17.465	39.7	1.5	39.7	1.5	308.6	0.998	12.85	0.980
7	14.519	15.682	43.1	-3.3	43.1	-3.3	305.4	1.002	12.16	0.999
8	13.858	15.070	43.4	-6.2	43.4	-6.2	304.6	1.003	11.99	1.011
9	13.200	14.448	43.5	-10.0	43.5	-10.0	304.0	1.004	12.02	1.002

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	186.1	167.0	186.1	167.0	130.0	166.7	133.2	10.1	0.	0.
2	191.9	171.2	191.9	171.2	148.6	171.1	121.5	6.2	0.	0.
3	197.1	173.8	197.1	173.8	156.1	173.8	120.3	2.8	0.	0.
4	204.9	181.7	204.9	181.7	165.2	181.7	121.2	3.0	0.	0.
5	206.9	179.3	206.9	179.3	160.9	179.3	130.0	3.8	0.	0.
6	205.8	169.2	205.8	169.2	158.5	169.1	131.4	4.6	0.	0.
7	190.3	157.3	190.3	157.3	138.8	157.0	130.1	-8.9	0.	0.
8	185.1	156.3	185.1	156.3	134.4	155.4	127.2	-16.8	0.	0.
9	185.7	151.9	185.7	151.9	134.8	149.6	127.8	-26.3	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.533	0.477	0.533	0.477	0.372	0.476	1.282
2	0.553	0.491	0.553	0.491	0.428	0.491	1.151
3	0.570	0.500	0.570	0.500	0.451	0.500	1.113
4	0.597	0.526	0.597	0.526	0.481	0.526	1.100
5	0.605	0.521	0.605	0.521	0.471	0.521	1.114
6	0.606	0.492	0.606	0.492	0.466	0.492	1.067
7	0.560	0.458	0.560	0.458	0.409	0.457	1.131
8	0.544	0.455	0.544	0.455	0.395	0.453	1.156
9	0.547	0.442	0.547	0.442	0.397	0.436	1.111

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	5.2	19.1	0.553	0.	0.133	0.133	0.091	0.091
2	10.00	-1.3	17.4	0.506	0.	0.117	0.117	0.078	0.078
3	15.00	-3.0	15.9	0.502	0.	0.116	0.116	0.075	0.075
4	30.00	-4.7	15.0	0.453	0.	0.083	0.083	0.050	0.050
5	50.00	-2.5	14.2	0.448	0.	0.061	0.061	0.032	0.032
6	70.00	-2.2	13.3	0.452	0.	0.090	0.090	0.041	0.041
7	85.00	0.9	7.7	0.461	0.	0.004	0.004	0.001	0.001
8	90.00	1.1	4.5	0.449	0.	-0.058	-0.058	-0.023	-0.023
9	95.00	1.1	0.5	0.482	0.	-0.010	-0.010	-0.004	-0.004

TABLE VIII. - Continued. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(s) 120 Percent design speed; reading 1696

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	25.230	25.298	42.0	-0.9	42.0	-0.9	319.6	0.993	12.89	0.991
2	24.547	24.671	34.4	-0.3	34.4	-0.3	317.6	0.996	13.29	0.975
3	23.876	24.049	32.9	-0.5	32.9	-0.5	316.6	0.995	13.45	0.974
4	21.847	22.222	33.7	-0.7	33.7	-0.7	313.7	0.997	13.40	0.990
5	19.164	19.827	35.7	-0.7	35.7	-0.7	310.9	0.996	13.10	0.991
6	16.502	17.465	37.4	1.0	37.4	1.0	308.0	0.998	12.77	0.983
7	14.519	15.682	40.6	-2.4	40.6	-2.4	305.4	1.000	12.12	0.999
8	13.858	15.070	40.9	-4.2	40.9	-4.2	304.5	1.002	11.90	1.011
9	13.200	14.448	40.6	-8.3	40.6	-8.3	303.5	1.002	11.85	1.002

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	190.4	173.4	190.4	173.4	141.5	173.4	127.5	-2.7	0.	0.
2	204.7	178.8	204.7	178.8	168.9	178.8	115.6	-0.9	0.	0.
3	212.5	183.8	212.5	183.8	178.5	183.8	115.4	-1.6	0.	0.
4	218.1	193.3	218.1	193.3	181.5	193.3	121.0	-2.5	0.	0.
5	216.2	189.4	216.2	189.4	175.6	189.3	126.2	-2.3	0.	0.
6	213.7	181.0	213.7	181.0	169.6	181.0	129.9	3.1	0.	0.
7	200.3	171.1	200.3	171.1	152.0	170.9	130.4	-7.1	0.	0.
8	193.2	168.1	193.2	168.1	146.0	167.7	126.6	-12.2	0.	0.
9	191.3	160.6	191.3	160.6	145.2	158.9	124.5	-23.1	0.	0.

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.547	0.497	0.547	0.497	0.406	0.497	1.225
2	0.593	0.515	0.593	0.515	0.489	0.515	1.058
3	0.618	0.531	0.618	0.531	0.519	0.531	1.030
4	0.639	0.562	0.639	0.562	0.532	0.562	1.065
5	0.636	0.553	0.636	0.553	0.516	0.553	1.078
6	0.631	0.529	0.631	0.529	0.501	0.529	1.067
7	0.591	0.500	0.591	0.500	0.449	0.500	1.124
8	0.570	0.492	0.570	0.492	0.431	0.490	1.149
9	0.565	0.469	0.565	0.469	0.429	0.464	1.094

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	1.5	14.8	0.555	0.	0.048	0.048	0.033	0.033
2	10.00	-6.2	15.0	0.503	0.	0.120	0.120	0.080	0.080
3	15.00	-7.7	14.5	0.490	0.	0.113	0.113	0.073	0.073
4	30.00	-7.3	13.3	0.448	0.	0.040	0.040	0.024	0.024
5	50.00	-5.7	12.3	0.432	0.	0.036	0.036	0.019	0.019
6	70.00	-4.4	12.7	0.417	0.	0.070	0.070	0.032	0.032
7	85.00	-1.6	8.6	0.416	0.	0.006	0.006	0.003	0.003
8	90.00	-1.4	6.5	0.400	0.	-0.053	-0.053	-0.021	-0.021
9	95.00	-1.8	2.2	0.439	0.	-0.011	-0.011	-0.004	-0.004

TABLE VIII. - Concluded. BLADE-ELEMENT DATA AT BLADE EDGES

FOR STATOR 55

(t) 120 Percent design speed; reading 1697

	RADII		ABS BETAM		REL BETAM		TOTAL TEMP		TOTAL PRESS	
RP	IN	OUT	IN	OUT	IN	OUT	IN	RATIO	IN	RATIO
1	24.729	24.714	0.0	33.6	49.8	38.3	289.1	1.095	10.04	1.238
2	24.026	24.028	0.0	29.3	48.8	34.3	288.8	1.091	10.13	1.271
3	23.322	23.343	0.0	28.5	48.3	32.0	288.4	1.090	10.14	1.284
4	21.173	21.285	0.0	30.9	45.4	25.3	287.9	1.085	10.14	1.285
5	18.321	18.542	0.0	33.3	41.4	15.6	287.8	1.079	10.15	1.276
6	15.540	15.799	0.0	33.3	36.7	7.6	287.9	1.068	10.14	1.245
7	13.541	13.741	0.0	36.7	32.9	1.9	287.9	1.056	10.15	1.166
8	12.906	13.056	0.0	37.6	32.0	-0.2	288.0	1.053	10.14	1.147
9	12.289	12.370	0.0	36.7	31.5	0.3	287.9	1.048	10.10	1.125

	ABS VEL		REL VEL		MERID VEL		TANG VEL		WHEEL SPEED	
RP	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1	210.0	205.2	325.4	217.7	210.0	170.9	0.0	113.6	248.6	248.5
2	210.9	222.1	320.0	234.4	210.9	193.7	0.0	108.7	240.6	240.6
3	208.2	228.1	312.9	236.3	208.2	200.5	0.1	108.7	233.6	233.8
4	209.3	232.3	298.2	220.5	209.3	199.3	0.0	119.3	212.5	213.6
5	208.9	238.3	278.4	206.8	208.9	199.2	0.0	130.8	184.0	186.2
6	208.8	240.1	260.6	202.4	208.8	200.7	0.1	131.8	155.9	158.5
7	209.8	220.9	249.8	177.2	209.8	177.1	0.1	132.1	135.8	137.8
8	207.1	215.6	244.2	170.7	207.1	170.7	0.1	131.6	129.5	131.0
9	201.7	206.6	236.5	165.7	201.7	165.7	0.0	123.5	123.5	124.4

	ABS MACH NO		REL MACH NO		MERID MACH NO		MERID
RP	IN	OUT	IN	OUT	IN	OUT	VEL R
1	0.641	0.596	0.993	0.632	0.641	0.496	0.814
2	0.644	0.650	0.977	0.686	0.644	0.567	0.918
3	0.636	0.670	0.955	0.694	0.636	0.589	0.963
4	0.640	0.686	0.912	0.651	0.640	0.588	0.952
5	0.639	0.708	0.851	0.614	0.639	0.591	0.953
6	0.639	0.718	0.797	0.605	0.639	0.600	0.961
7	0.642	0.659	0.764	0.528	0.642	0.528	0.844
8	0.633	0.643	0.746	0.509	0.633	0.509	0.825
9	0.615	0.616	0.721	0.493	0.615	0.493	0.821

	PERCENT	INCIDENCE	DEV	D-FACT	EFF	LOSS COEFF		LOSS PARAM	
RP	SPAN	MEAN				TOT	PROF	TOT	PROF
1	5.00	-0.5	10.6	0.526	0.667	0.208	0.208	0.091	0.091
2	10.00	-1.3	10.2	0.455	0.779	0.138	0.138	0.063	0.063
3	15.00	-1.4	10.8	0.434	0.825	0.112	0.112	0.051	0.051
4	30.00	-2.3	11.8	0.472	0.869	0.086	0.086	0.041	0.041
5	50.00	-2.6	11.4	0.494	0.913	0.059	0.059	0.028	0.028
6	70.00	-2.9	12.4	0.463	0.951	0.032	0.032	0.015	0.015
7	85.00	-1.5	12.9	0.526	0.795	0.118	0.118	0.052	0.052
8	90.00	-0.4	12.8	0.535	0.749	0.142	0.142	0.061	0.061
9	95.00	1.2	15.2	0.520	0.712	0.155	0.155	0.066	0.066

Axial location, z, cm	Hub	Tip
	Radius, r, cm	
-15	7.8	26.0
-10	10.4	26.0
-5	11.5	25.7
0	11.55	25.4
5	11.55	25.4
10	11.60	25.4
15	11.85	25.6
20	12.25	25.85
25	12.55	25.94
30	13.10	↓
35	13.90	
40	13.40	
45	13.00	
50	12.50	

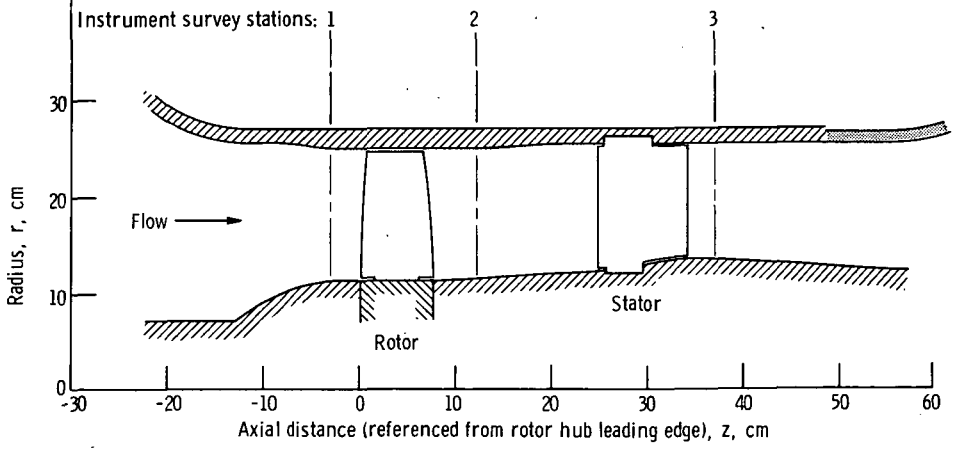


Figure 1. - Flow path of fan stage 55-55.

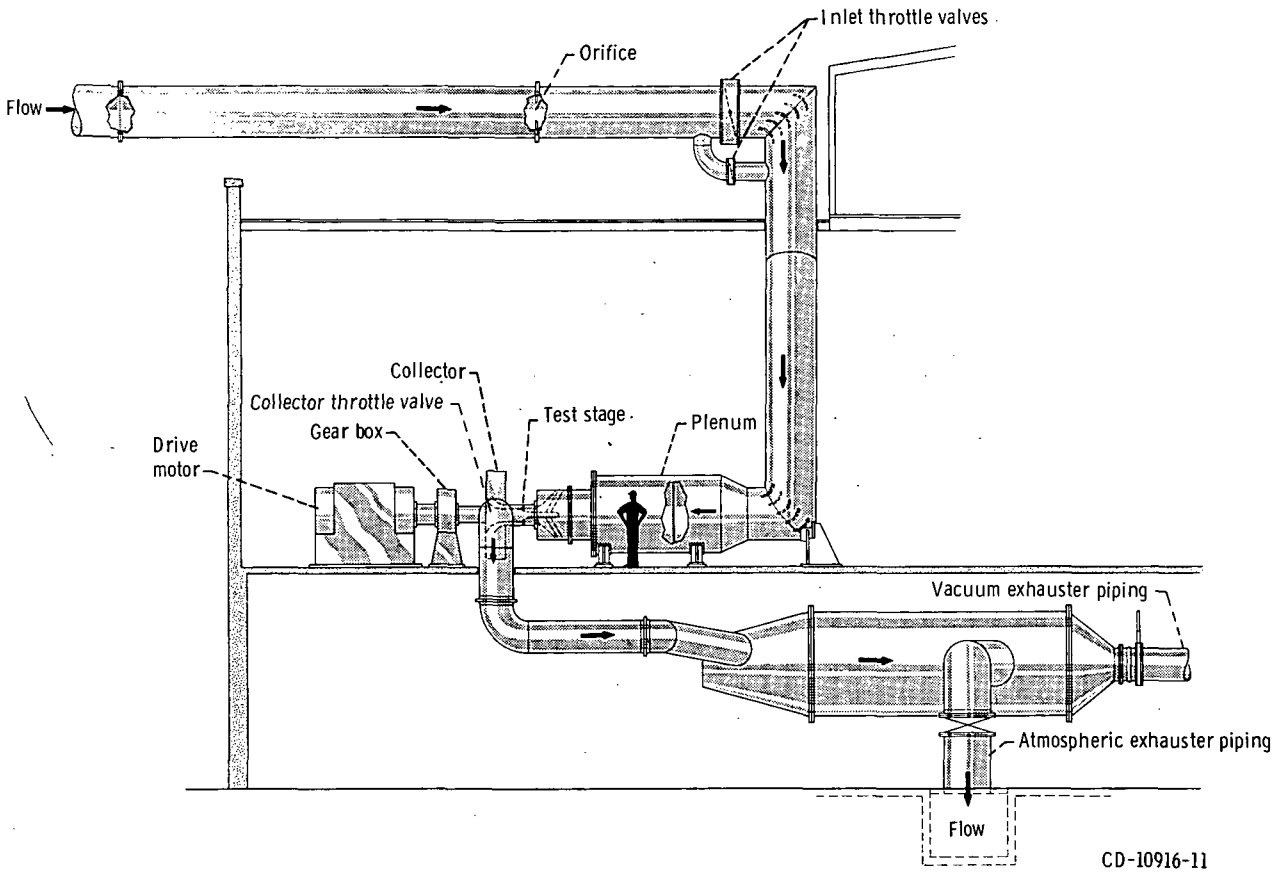


Figure 2. - Single-stage compressor facility.

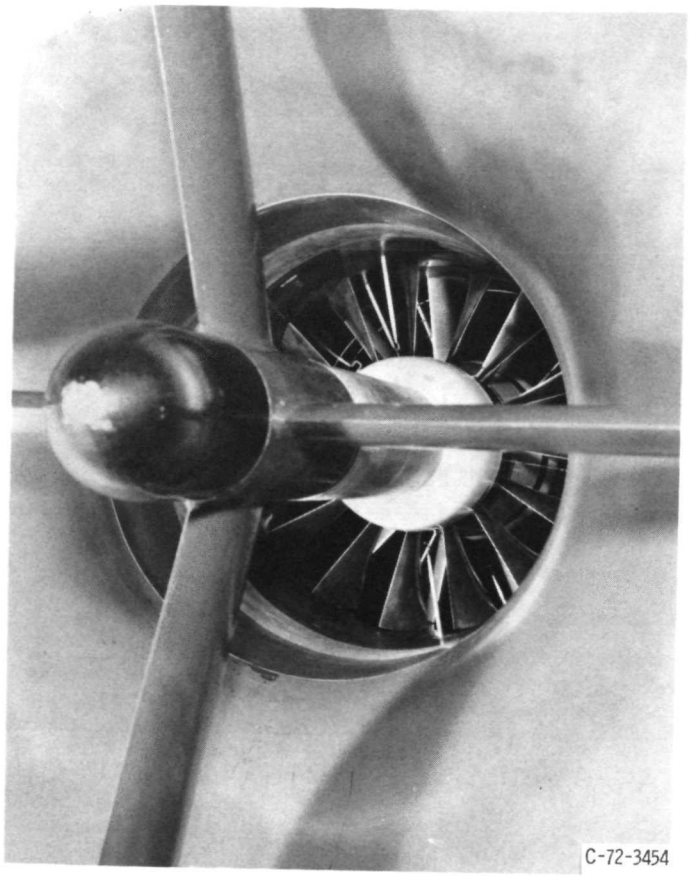
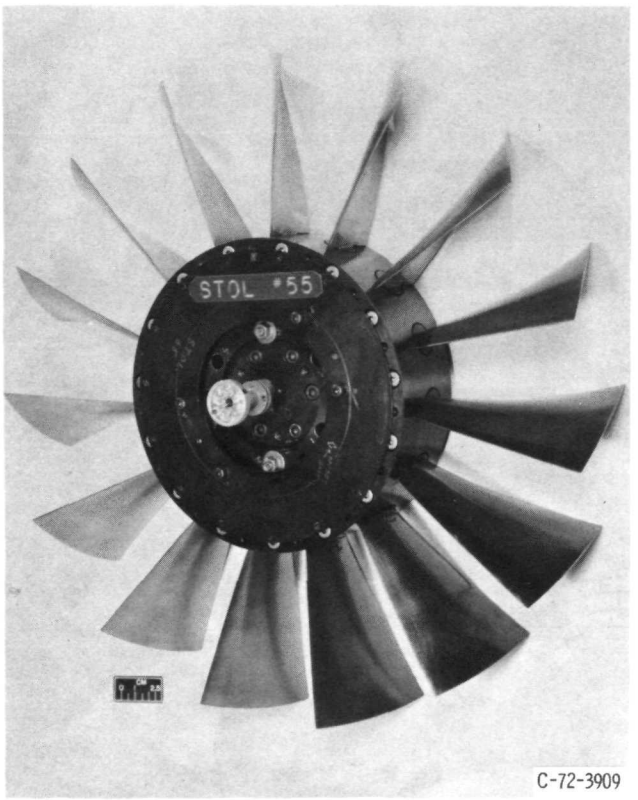
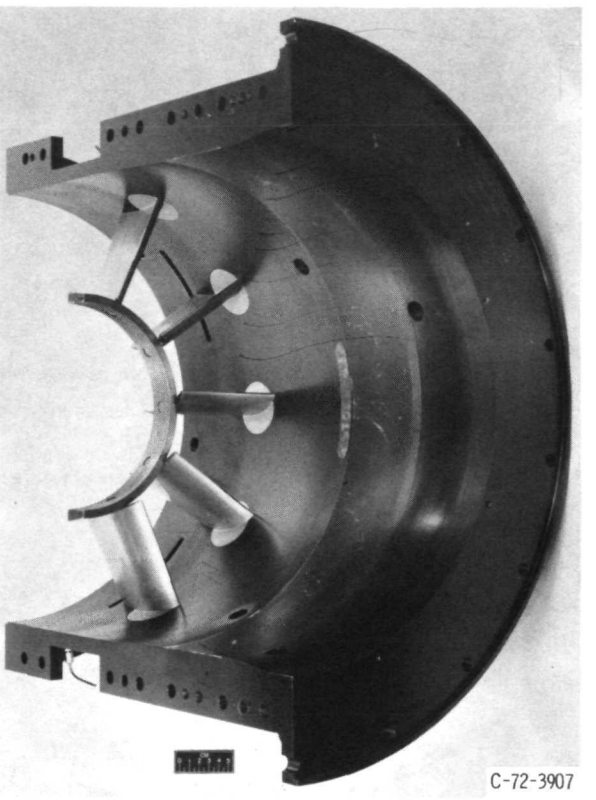


Figure 3. - Fan stage 55-55 in compressor research facility.

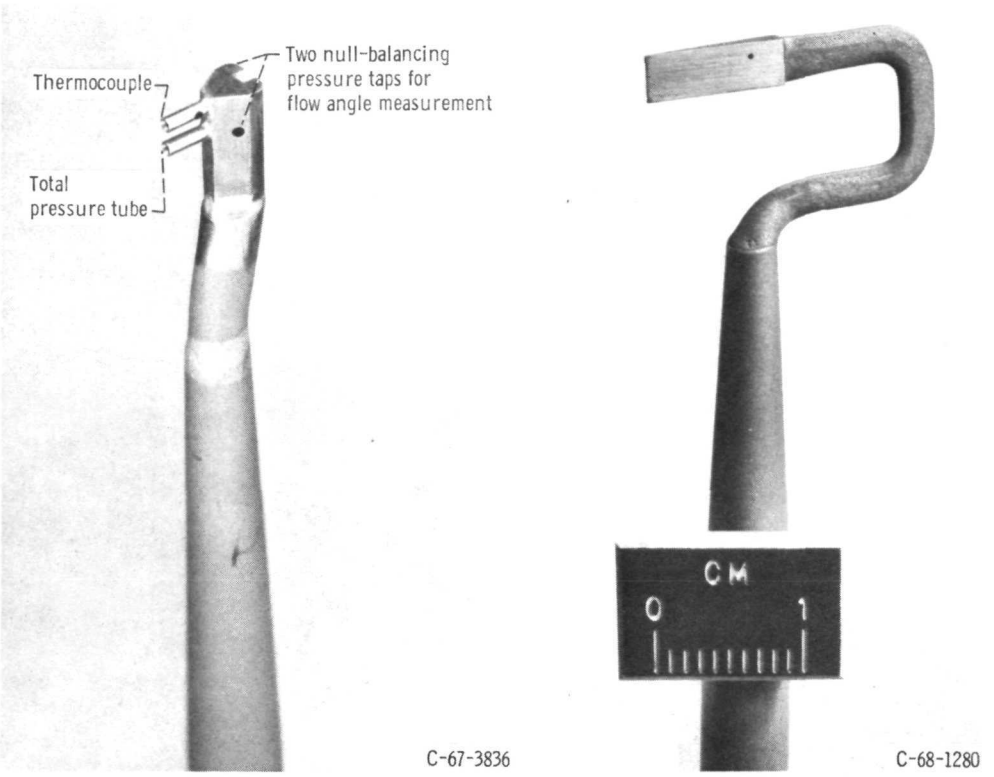


(a) STOL rotor 55.



(b) STOL stator 55.

Figure 4. - Fan stage 55-55.



(a) Combination total pressure, total temperature, and flow angle probe.

(b) Static pressure probe; 8^{0} C-shaped wedge.

Figure 5. - Survey probes.

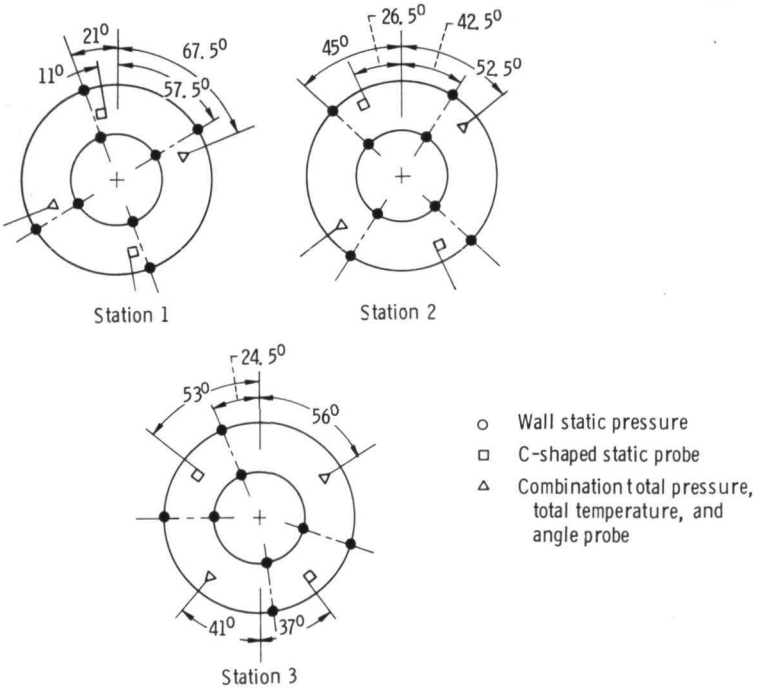


Figure 6. - Circumferential location of survey instrumentation at each station looking downstream.

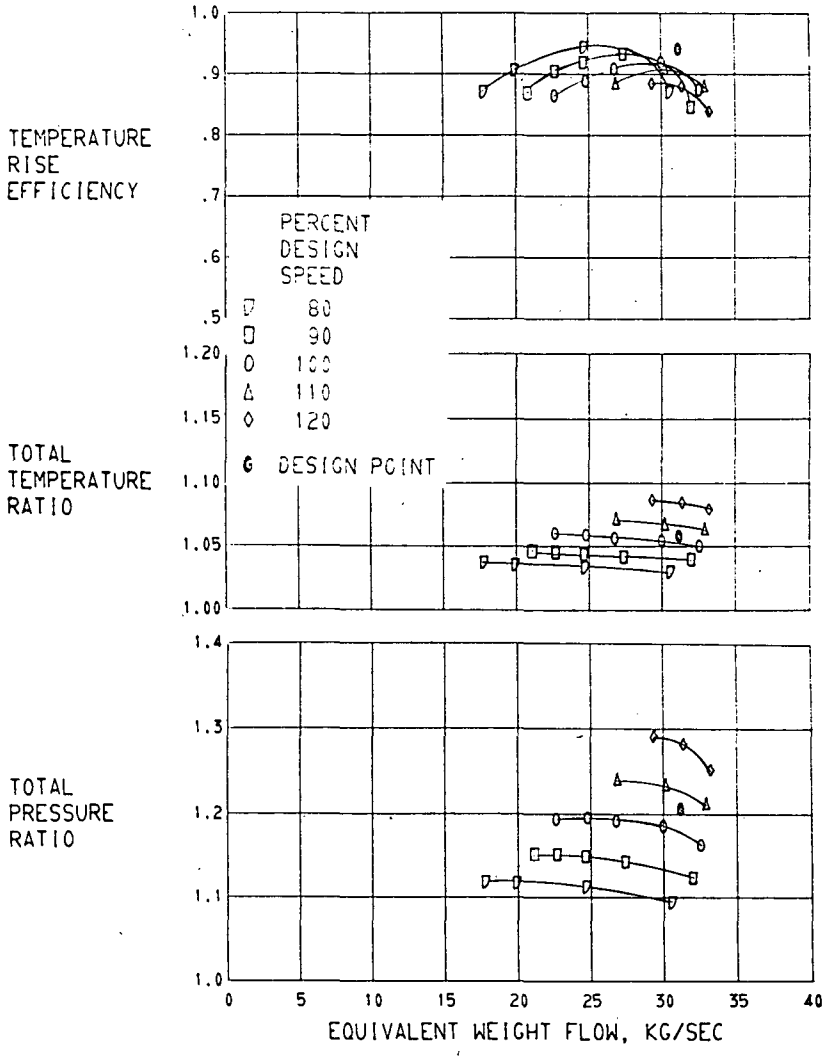


FIGURE 7. - OVERALL PERFORMANCE FOR ROTOR 55.

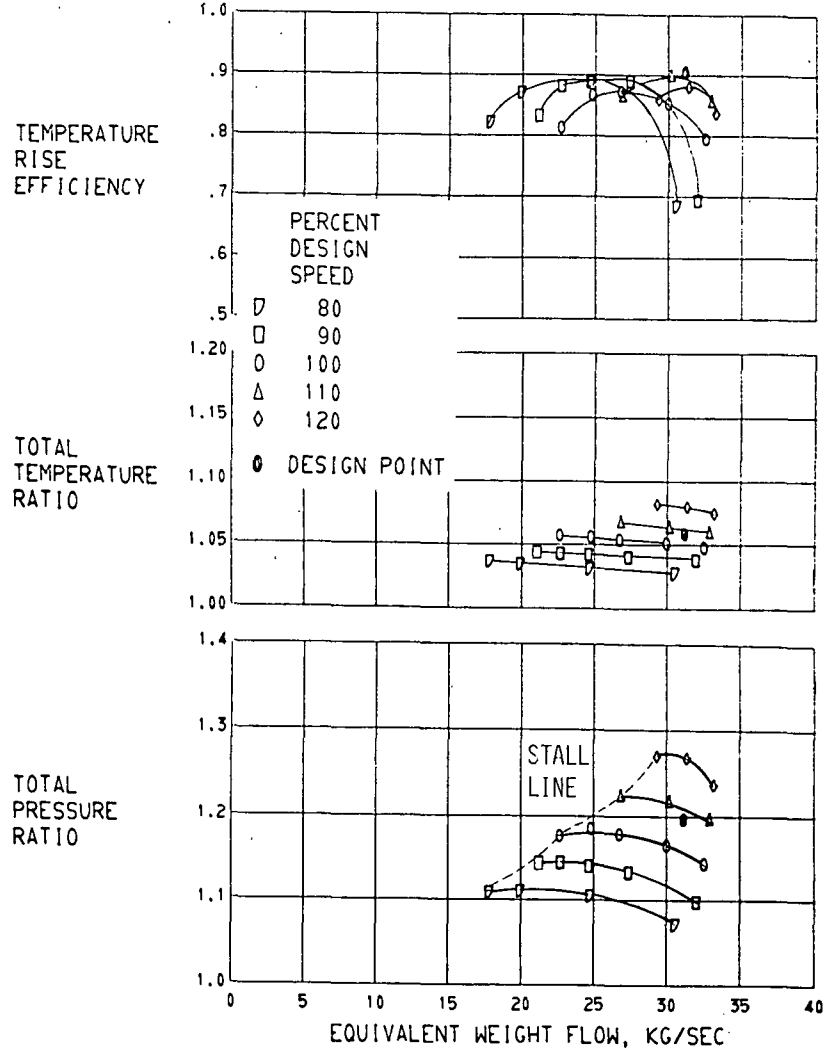
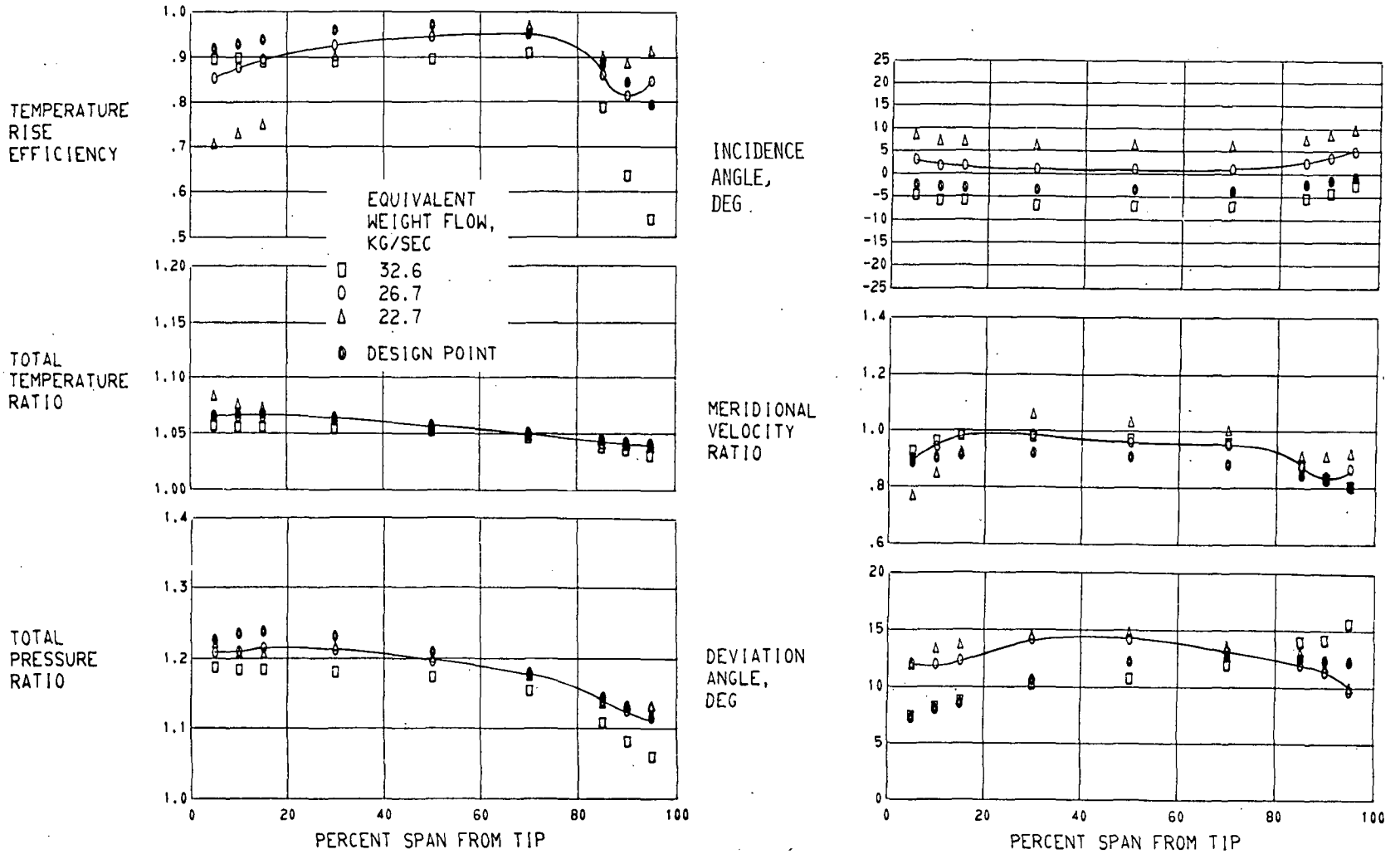


FIGURE 8. - OVERALL PERFORMANCE FOR STAGE 55-55.


TEMPERATURE RISE EFFICIENCY
TOTAL TEMPERATURE RATIO
TOTAL PRESSURE RATIO
EQUIVALENT WEIGHT FLOW, KG/SEC
32.6
26.7
22.7
DESIGN POINT
INCIDENCE ANGLE, DEG
MERIDIONAL VELOCITY RATIO
DEVIATION ANGLE, DEG
PERCENT SPAN FROM TIP
PERCENT SPAN FROM TIP

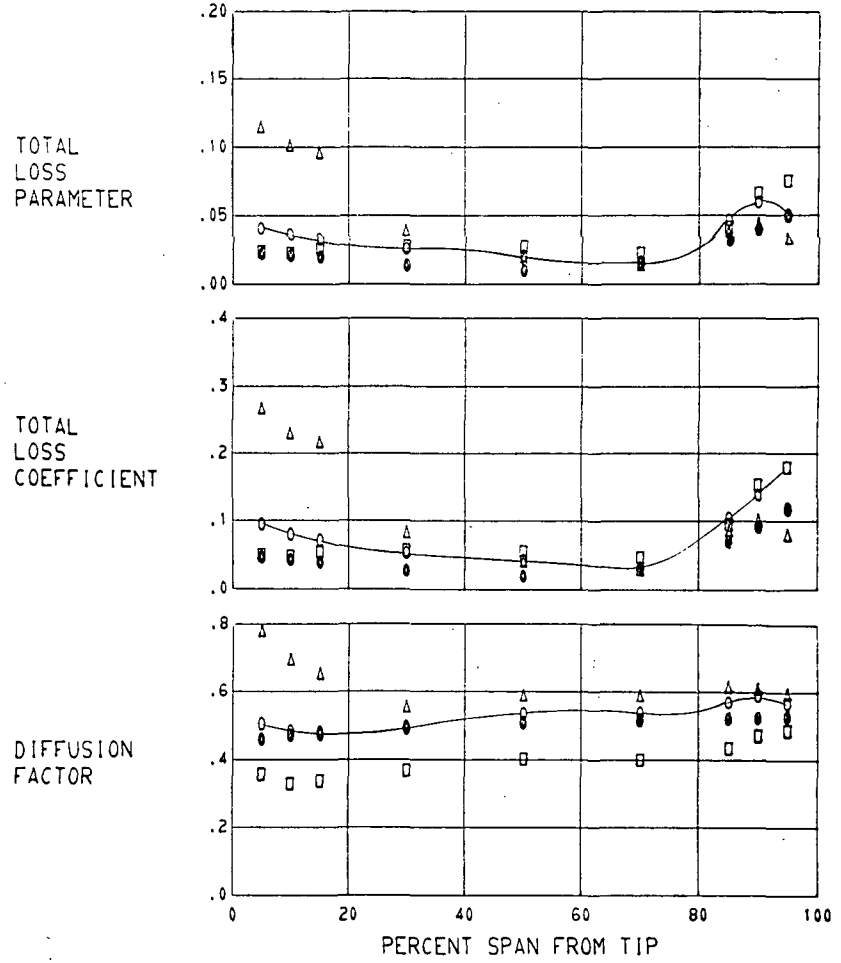


FIGURE 9. - RADIAL DISTRIBUTION OF PERFORMANCE FOR ROTOR 55. 100 PERCENT DESIGN SPEED.

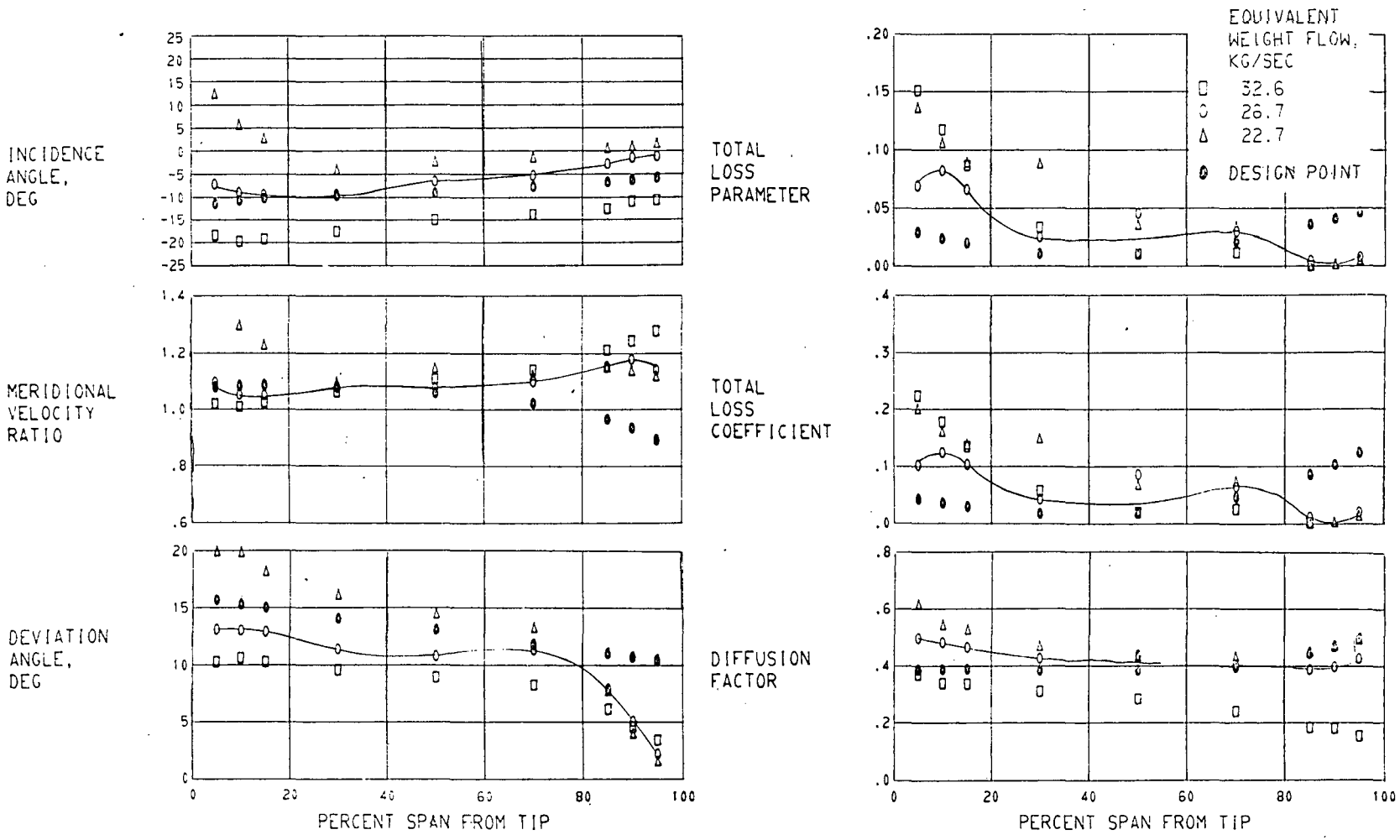
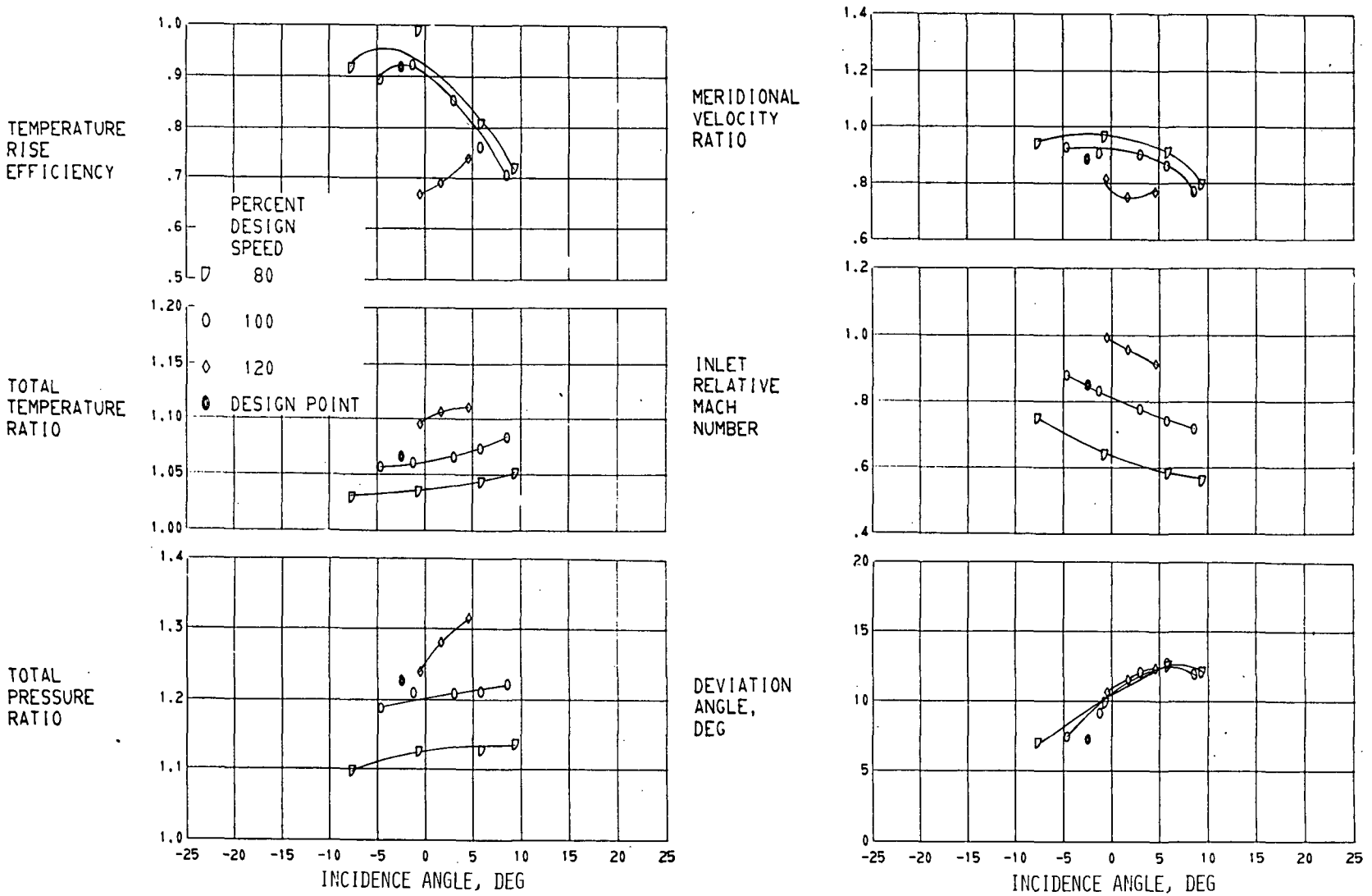
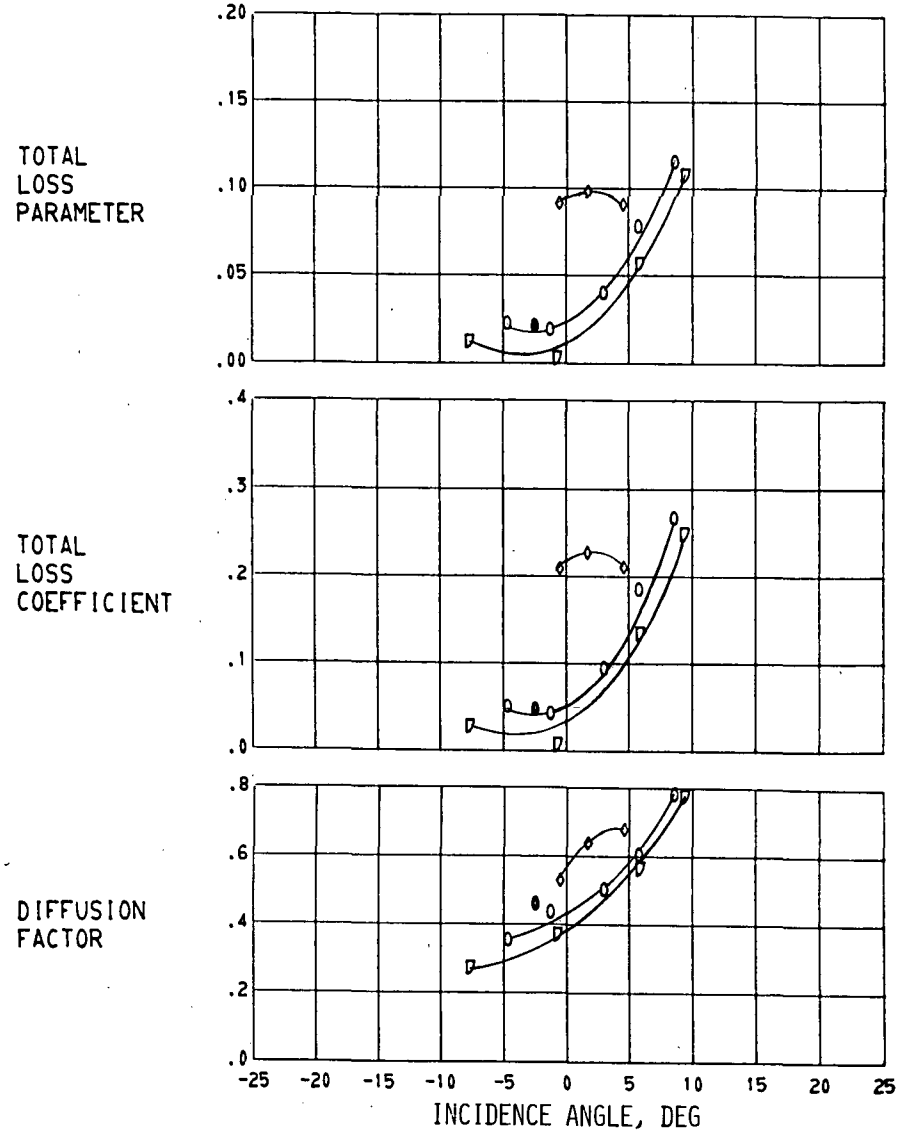


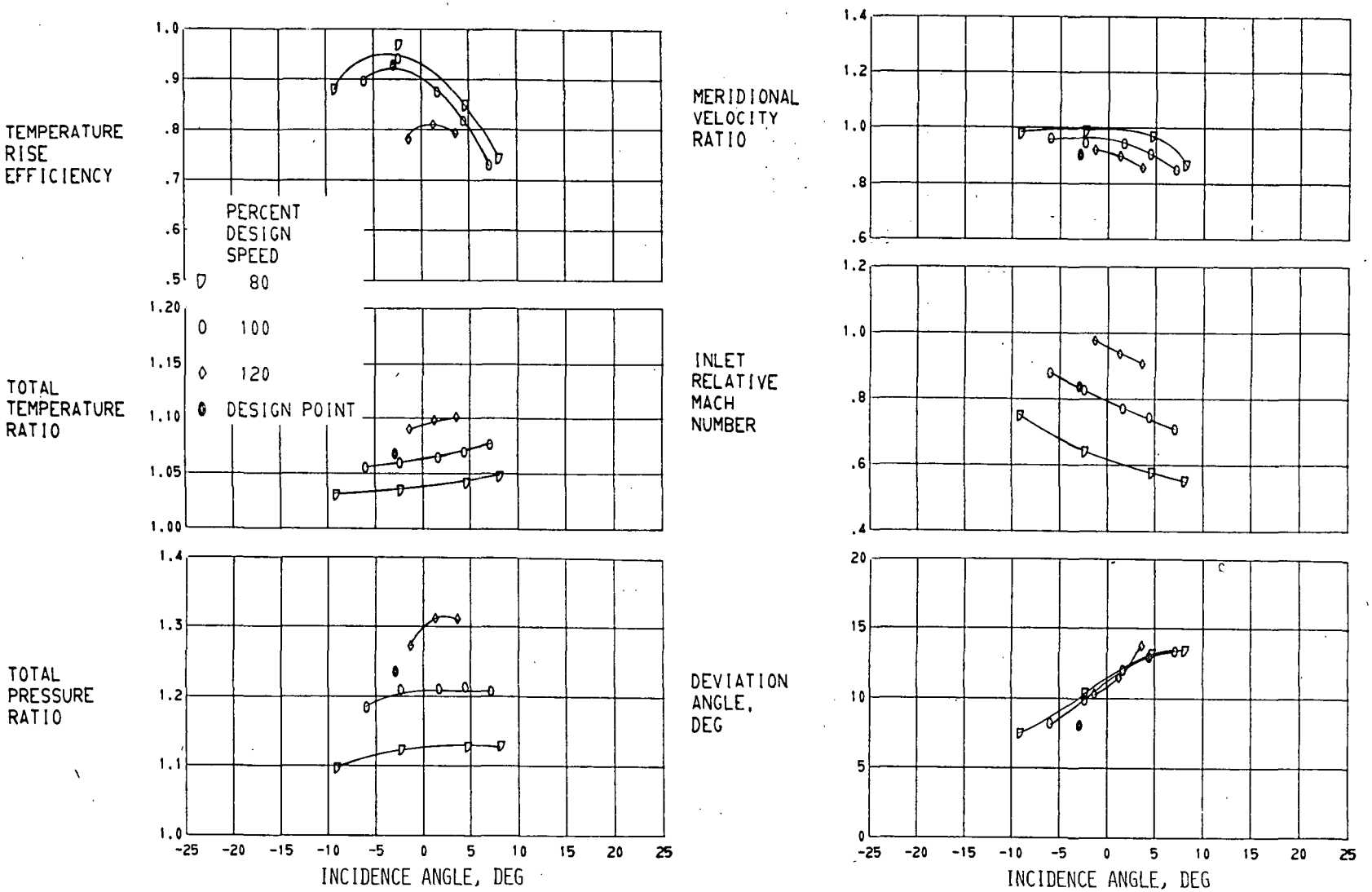
FIGURE 10. - RADIAL DISTRIBUTION OF PERFORMANCE FOR STATOR 55. 100 PERCENT DESIGN SPEED.

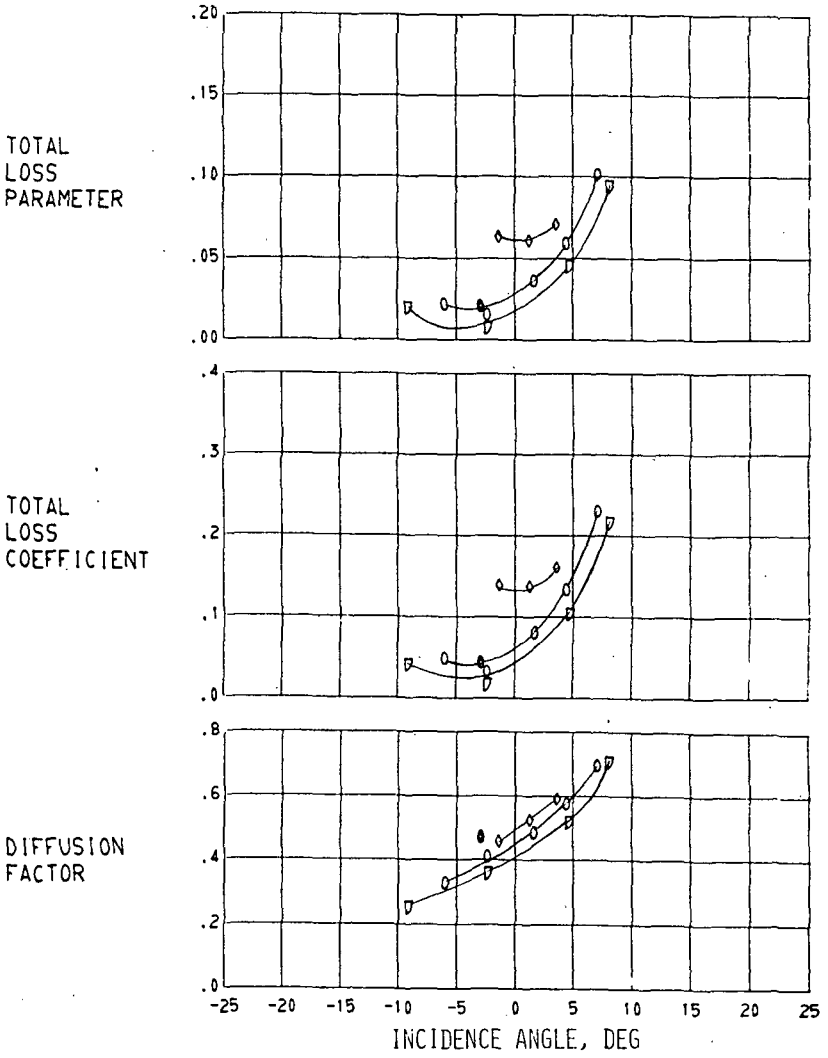

TEMPERATURE RISE EFFICIENCY
TOTAL TEMPERATURE RATIO
TOTAL PRESSURE RATIO
PERCENT DESIGN SPEED
80
100
120
DESIGN POINT
INCIDENCE ANGLE, DEG
MERIDIONAL VELOCITY RATIO
INLET RELATIVE MACH NUMBER
DEVIATION ANGLE, DEG
INCIDENCE ANGLE, DEG



(A) 5.0 PERCENT SPAN.

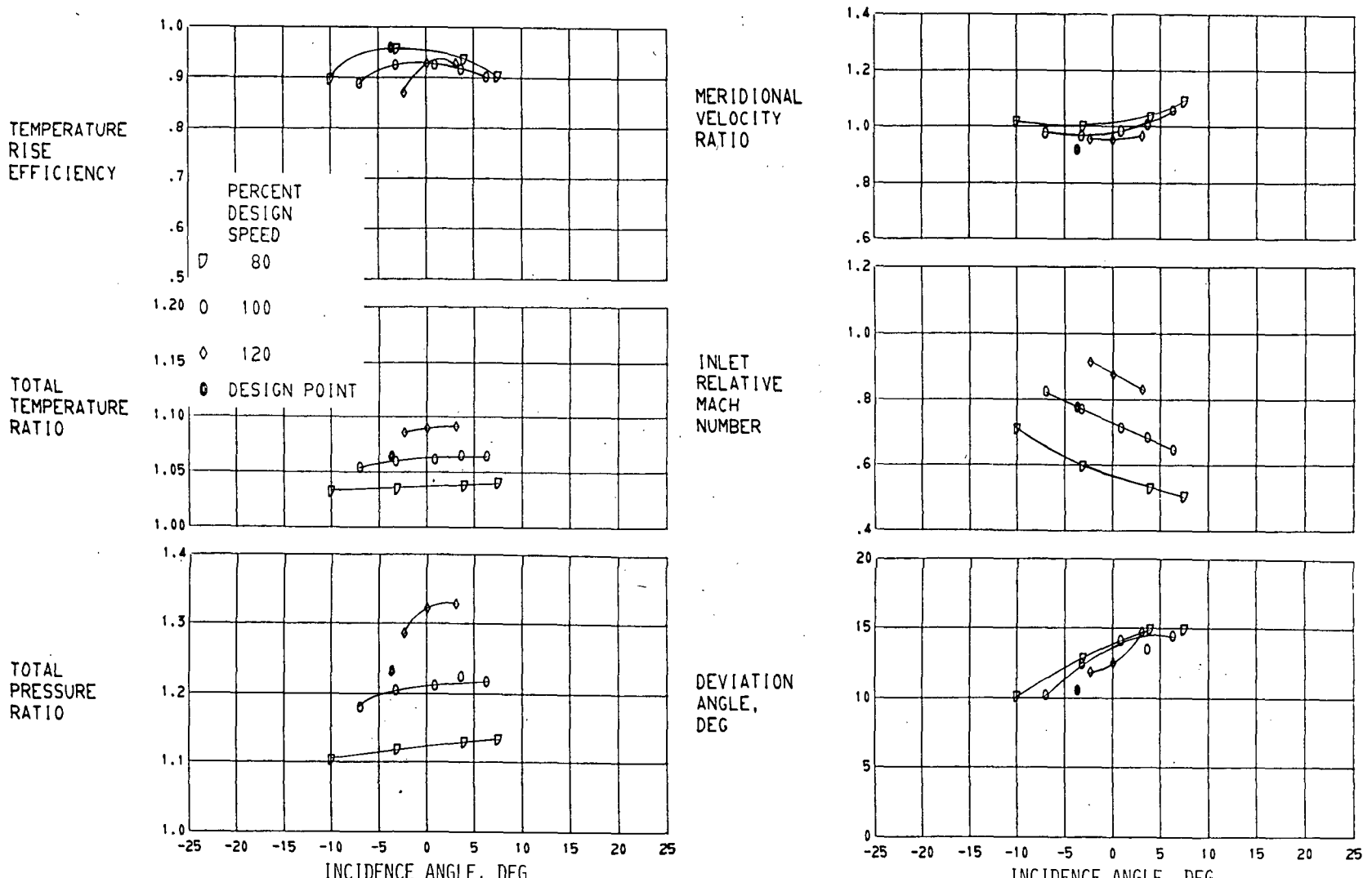
FIGURE 11. - BLADE-ELEMENT PERFORMANCE FOR ROTOR 55.

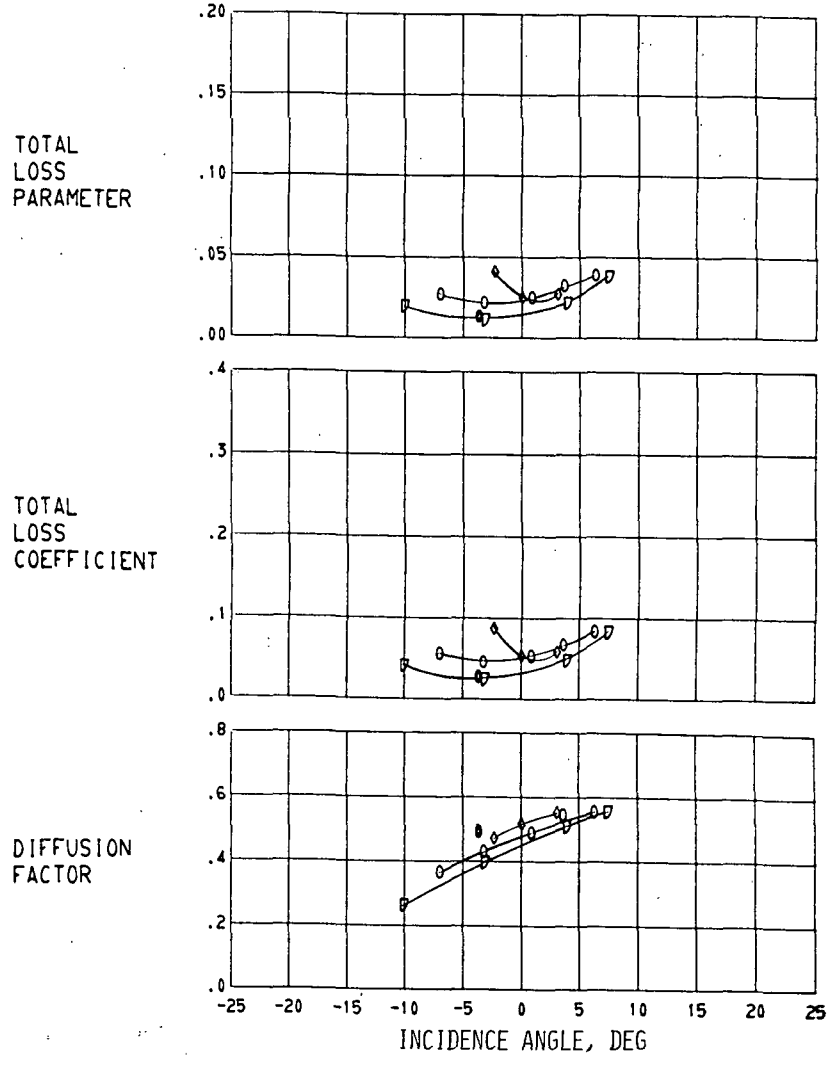

TEMPERATURE RISE EFFICIENCY
TOTAL TEMPERATURE RATIO
TOTAL PRESSURE RATIO
PERCENT DESIGN SPEED
80
100
120
DESIGN POINT
INCIDENCE ANGLE, DEG
MERIDIONAL VELOCITY RATIO
INLET RELATIVE MACH NUMBER
DEVIATION ANGLE, DEG
INCIDENCE ANGLE, DEG



(B) 10.0 PERCENT SPAN.

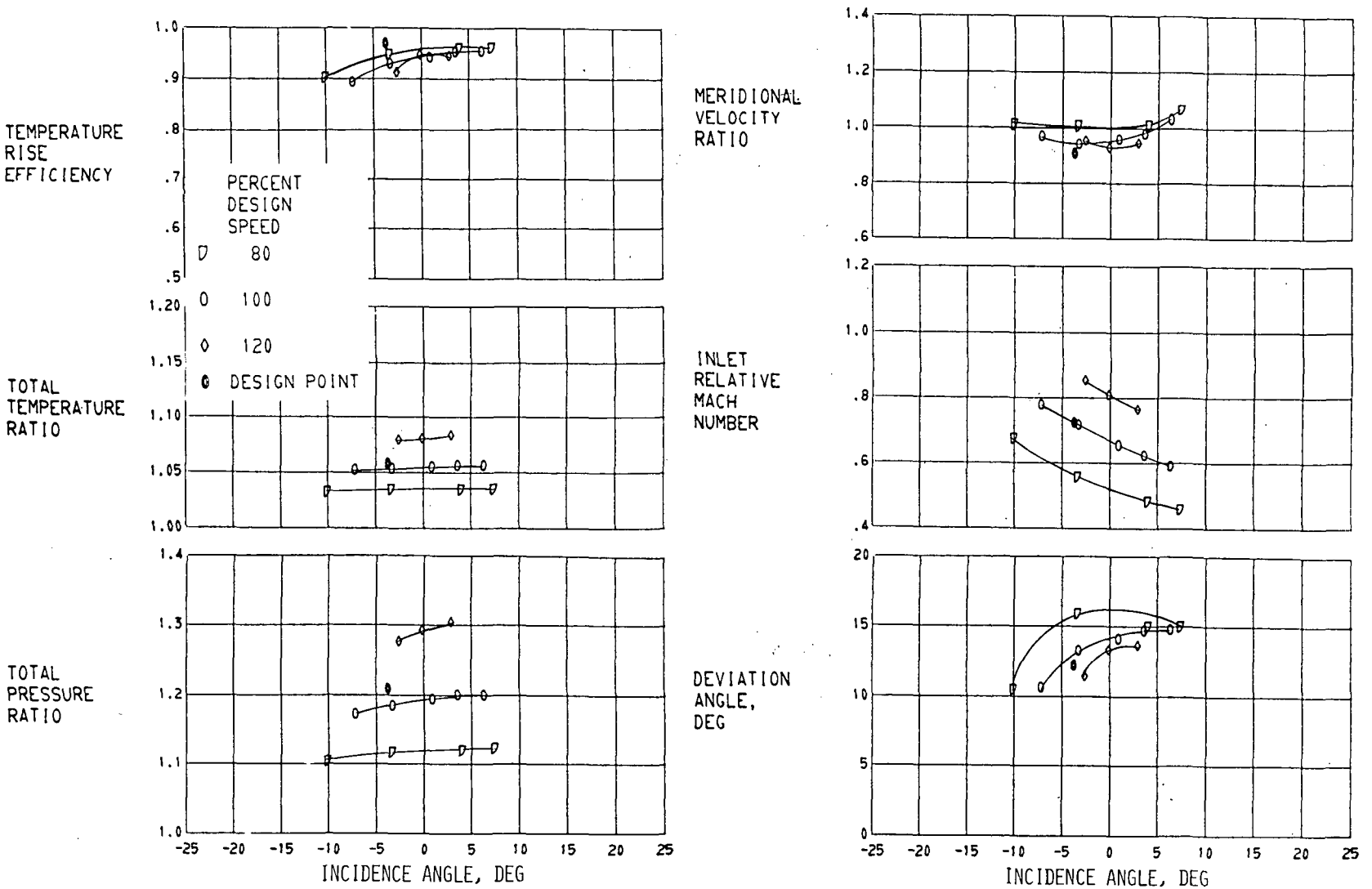
FIGURE 11. - CONTINUED. BLADE-ELEMENT PERFORMANCE FOR ROTOR 55.

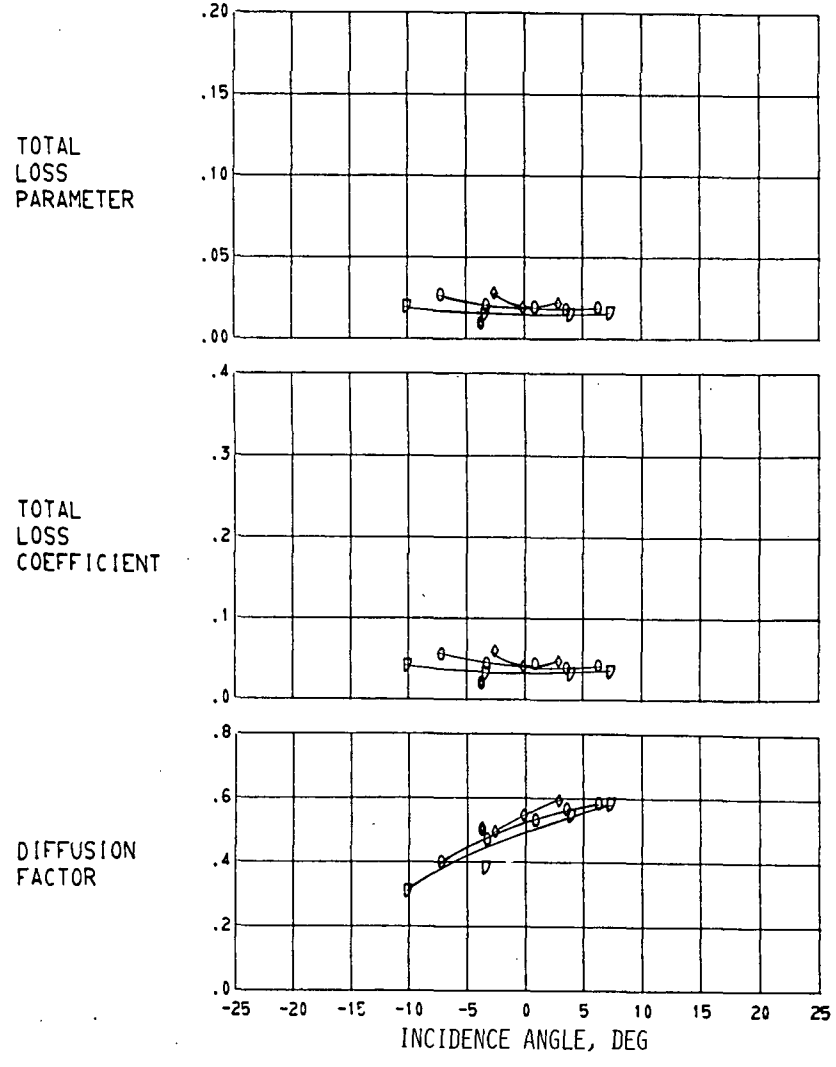

TEMPERATURE RISE EFFICIENCY
TOTAL TEMPERATURE RATIO
TOTAL PRESSURE RATIO
PERCENT DESIGN SPEED
80
100
120
DESIGN POINT
INCIDENCE ANGLE, DEG
MERIDIONAL VELOCITY RATIO
INLET RELATIVE MACH NUMBER
DEVIATION ANGLE, DEG
INCIDENCE ANGLE, DEG



(C) 30.0 PERCENT SPAN.

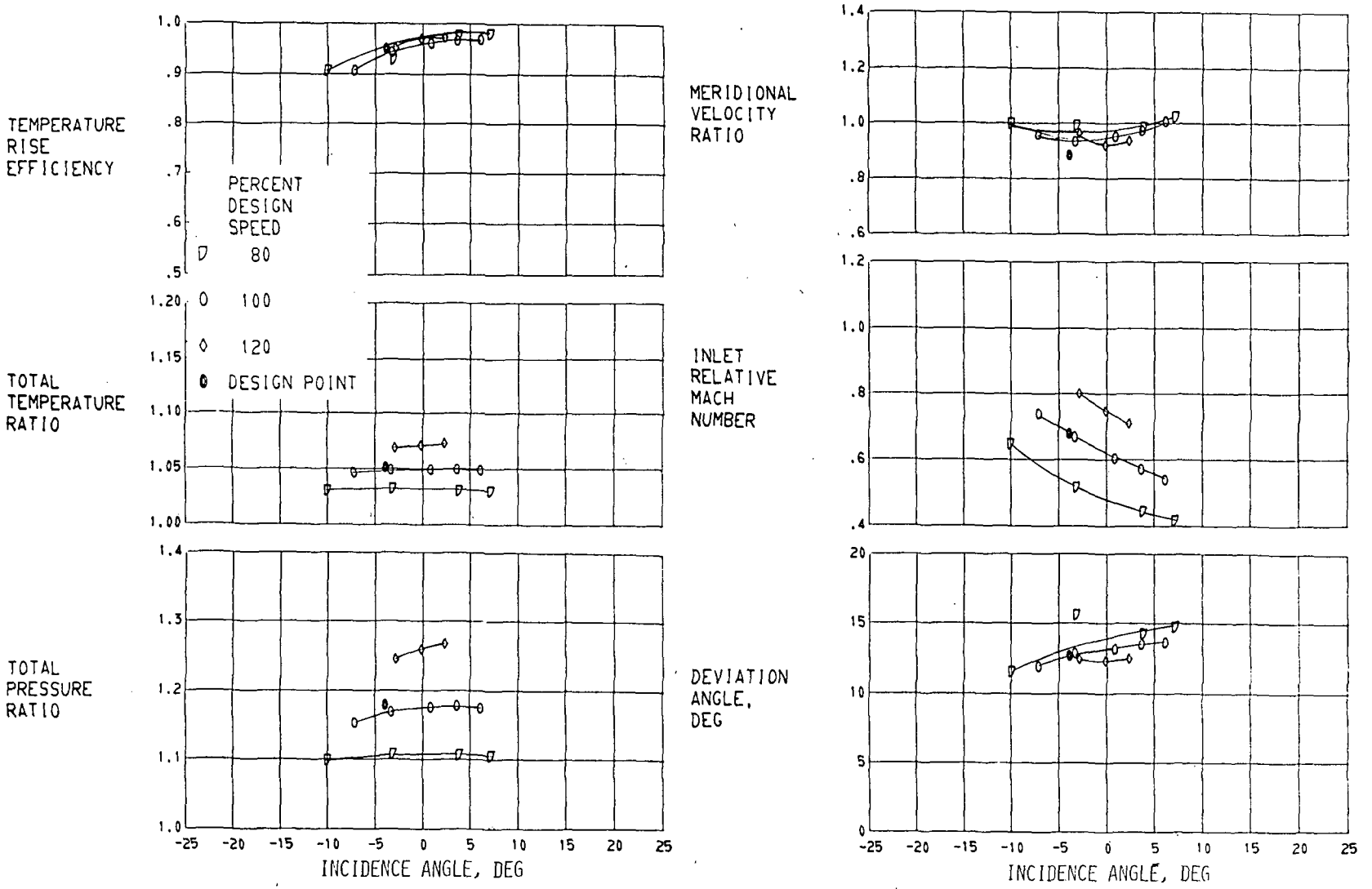
FIGURE 11. - CONTINUED. BLADE-ELEMENT PERFORMANCE FOR ROTOR 55.

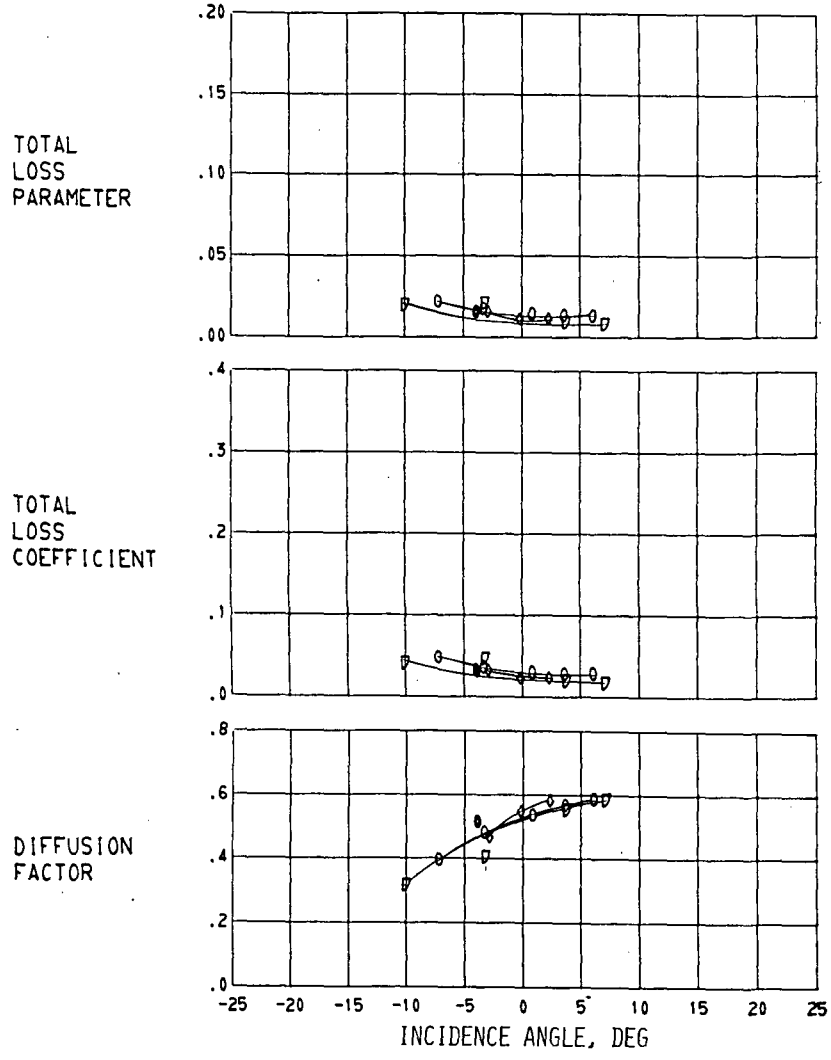

TEMPERATURE RISE EFFICIENCY
TOTAL TEMPERATURE RATIO
TOTAL PRESSURE RATIO
PERCENT DESIGN SPEED
80
100
120
DESIGN POINT
INCIDENCE ANGLE, DEG
MERIDIONAL VELOCITY RATIO
INLET RELATIVE MACH NUMBER
DEVIATION ANGLE, DEG
INCIDENCE ANGLE, DEG



(D) 50.0 PERCENT SPAN.

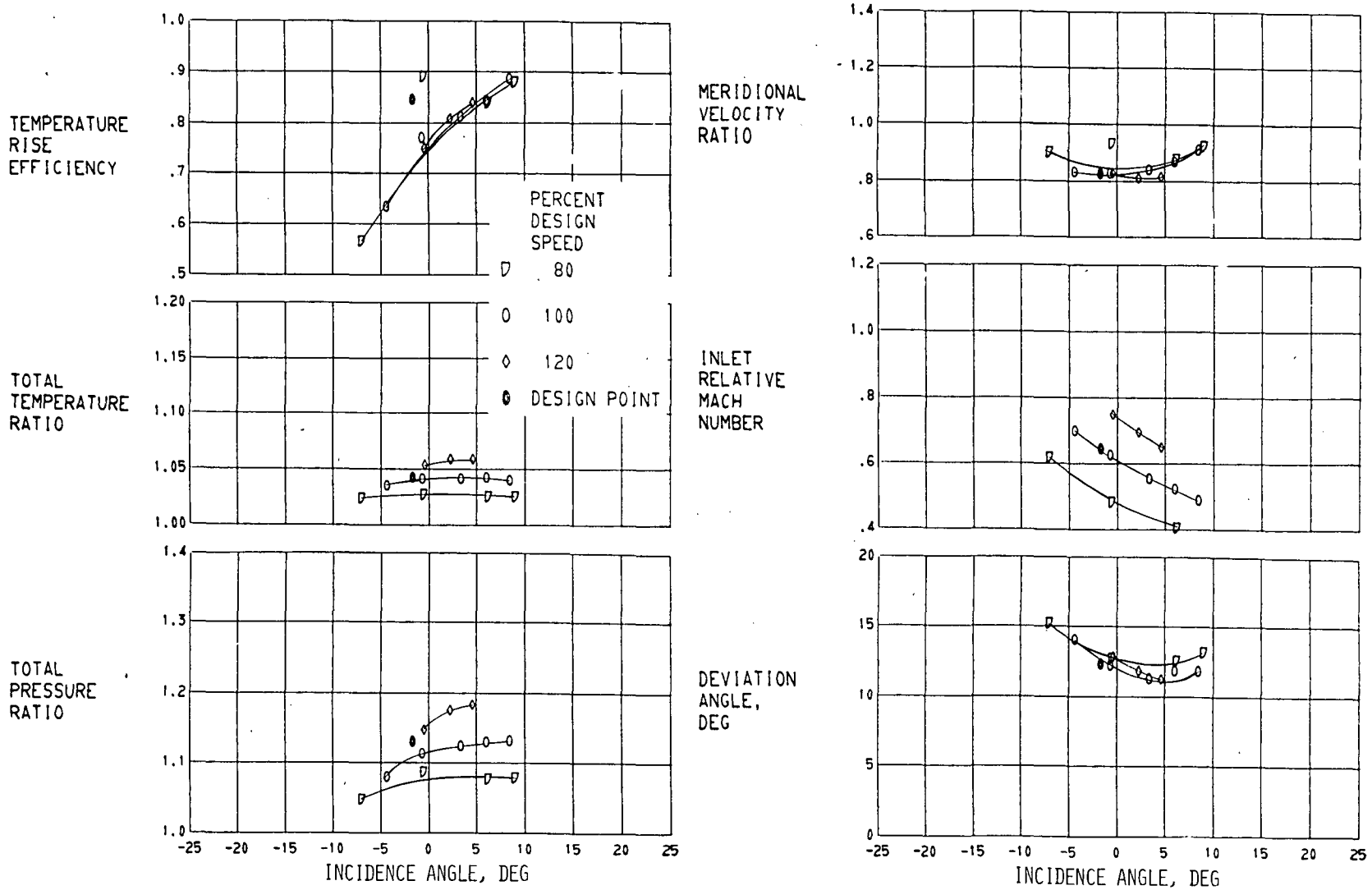
FIGURE 11. - CONTINUED. BLADE-ELEMENT PERFORMANCE FOR ROTOR 55.

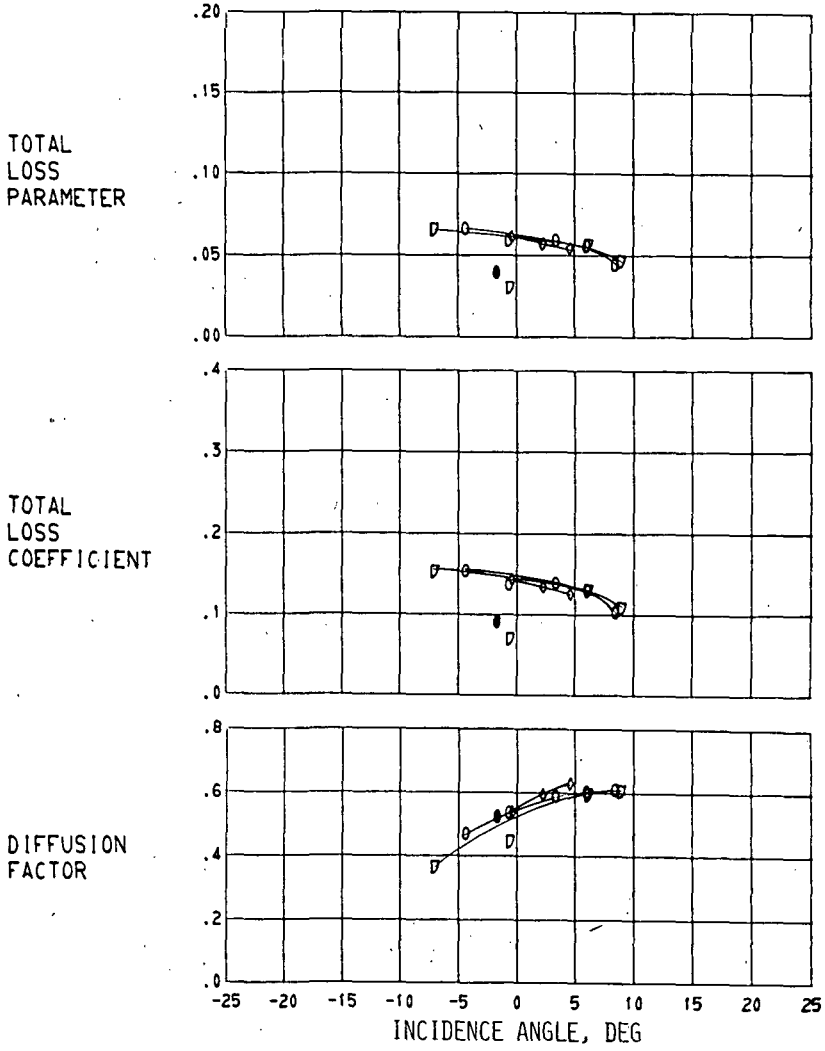

TEMPERATURE RISE EFFICIENCY
TOTAL TEMPERATURE RATIO
TOTAL PRESSURE RATIO
PERCENT DESIGN SPEED
80
100
120
DESIGN POINT
INCIDENCE ANGLE, DEG
MERIDIONAL VELOCITY RATIO
INLET RELATIVE MACH NUMBER
DEVIATION ANGLE, DEG
INCIDENCE ANGLE, DEG



(E) 70.0 PERCENT SPAN.

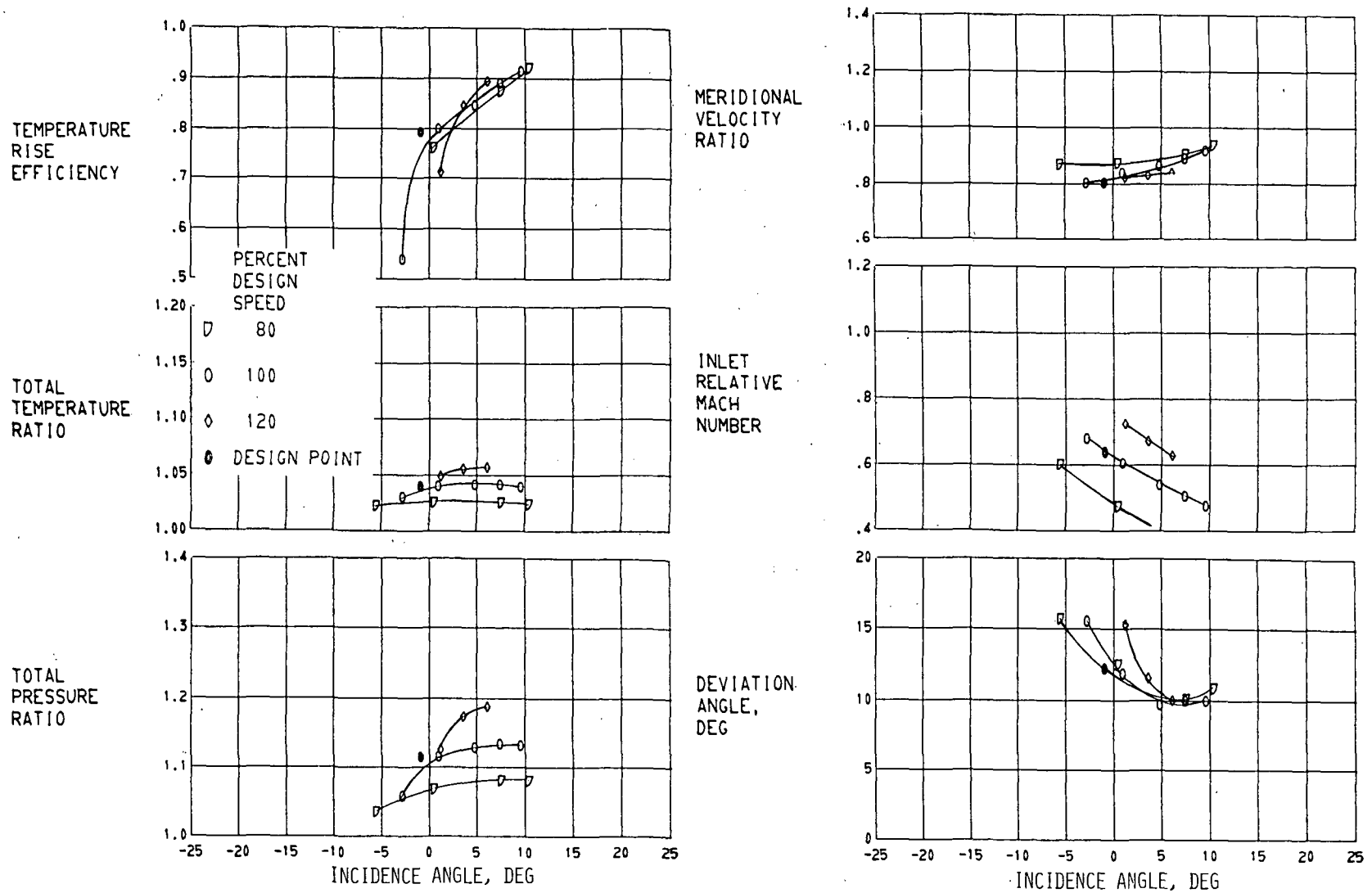
FIGURE 11. - CONTINUED. BLADE-ELEMENT PERFORMANCE FOR ROTOR 55.

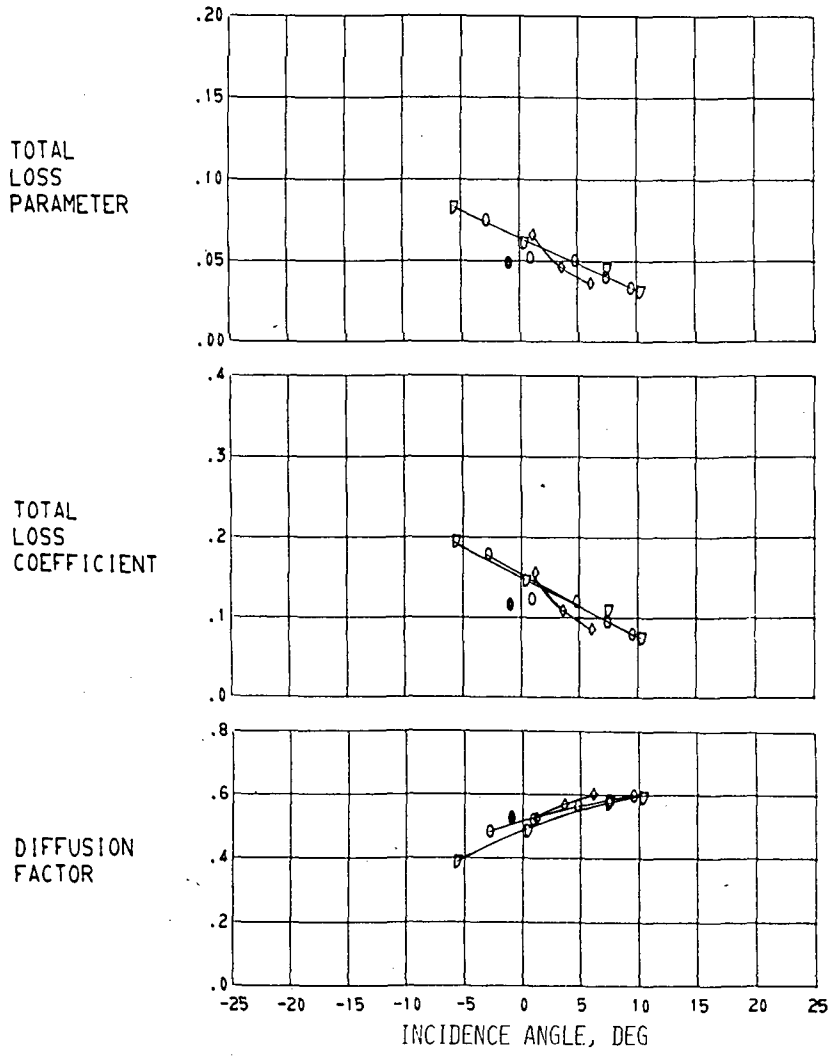

TEMPERATURE RISE EFFICIENCY
TOTAL TEMPERATURE RATIO
TOTAL PRESSURE RATIO
MERIDIONAL VELOCITY RATIO
INLET RELATIVE MACH NUMBER
DEVIATION ANGLE, DEG
PERCENT DESIGN SPEED
80
100
120
DESIGN POINT
INCIDENCE ANGLE, DEG
INCIDENCE ANGLE, DEG



(F) 90.0 PERCENT SPAN.

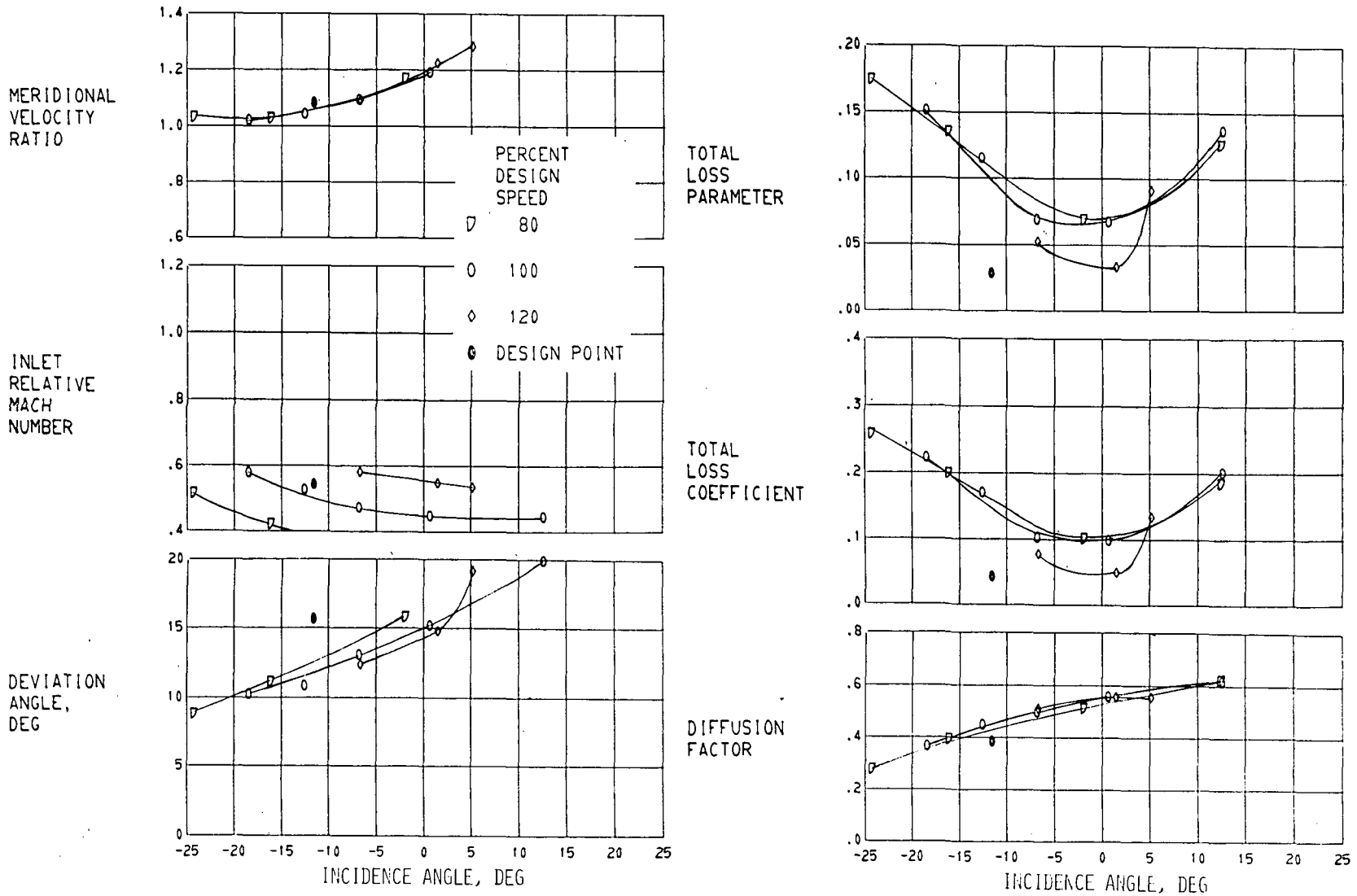
FIGURE 11. - CONTINUED. BLADE-ELEMENT PERFORMANCE FOR ROTOR 55.


TEMPERATURE RISE EFFICIENCY
TOTAL TEMPERATURE RATIO
TOTAL PRESSURE RATIO
PERCENT DESIGN SPEED
80
100
120
DESIGN POINT
MERIDIONAL VELOCITY RATIO
INLET RELATIVE MACH NUMBER
DEVIATION ANGLE, DEG
INCIDENCE ANGLE, DEG
INCIDENCE ANGLE, DEG



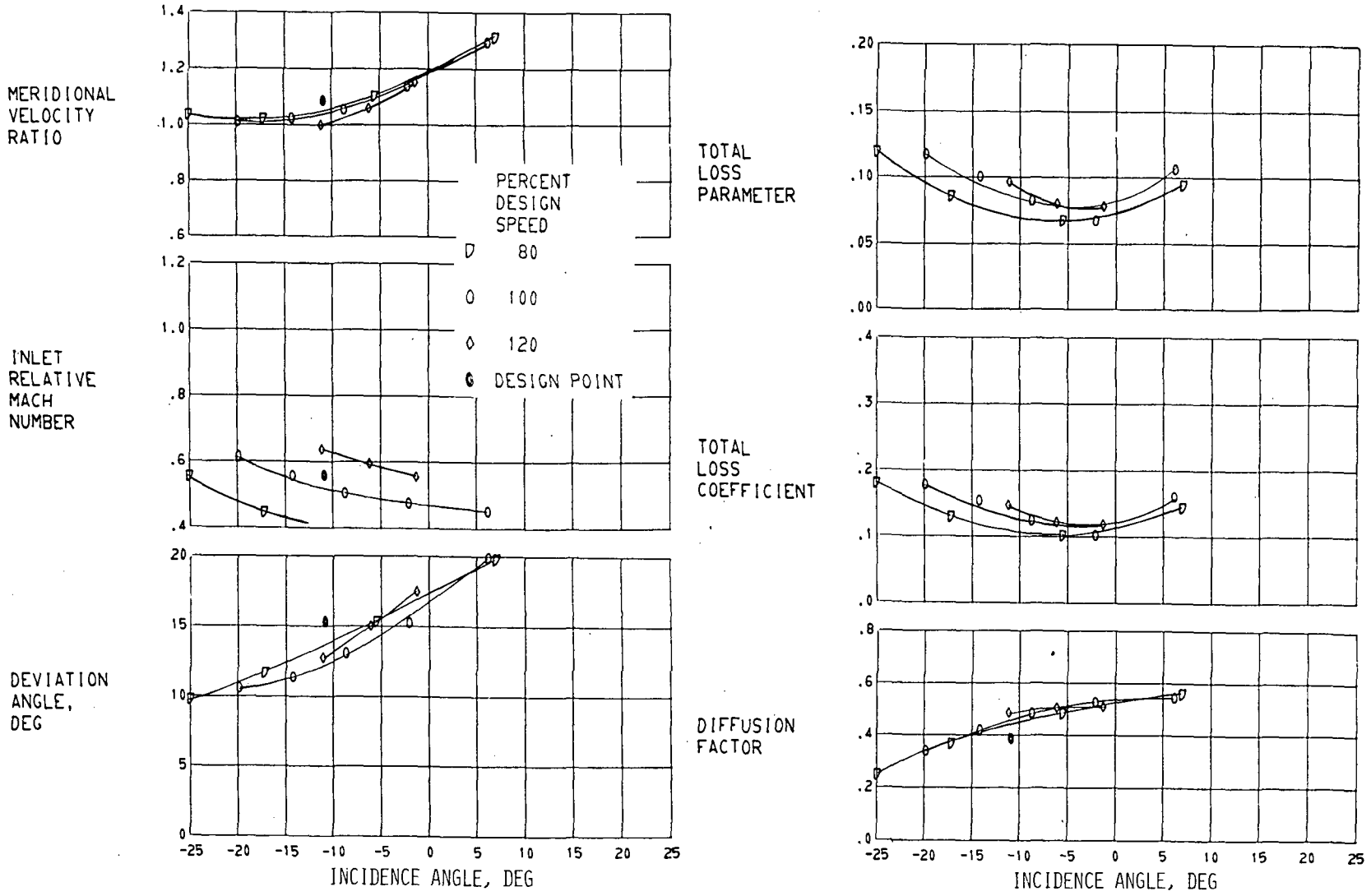
(G) 95.0 PERCENT SPAN.

FIGURE 11. - CONCLUDED. BLADE-ELEMENT PERFORMANCE FOR ROTOR 55.



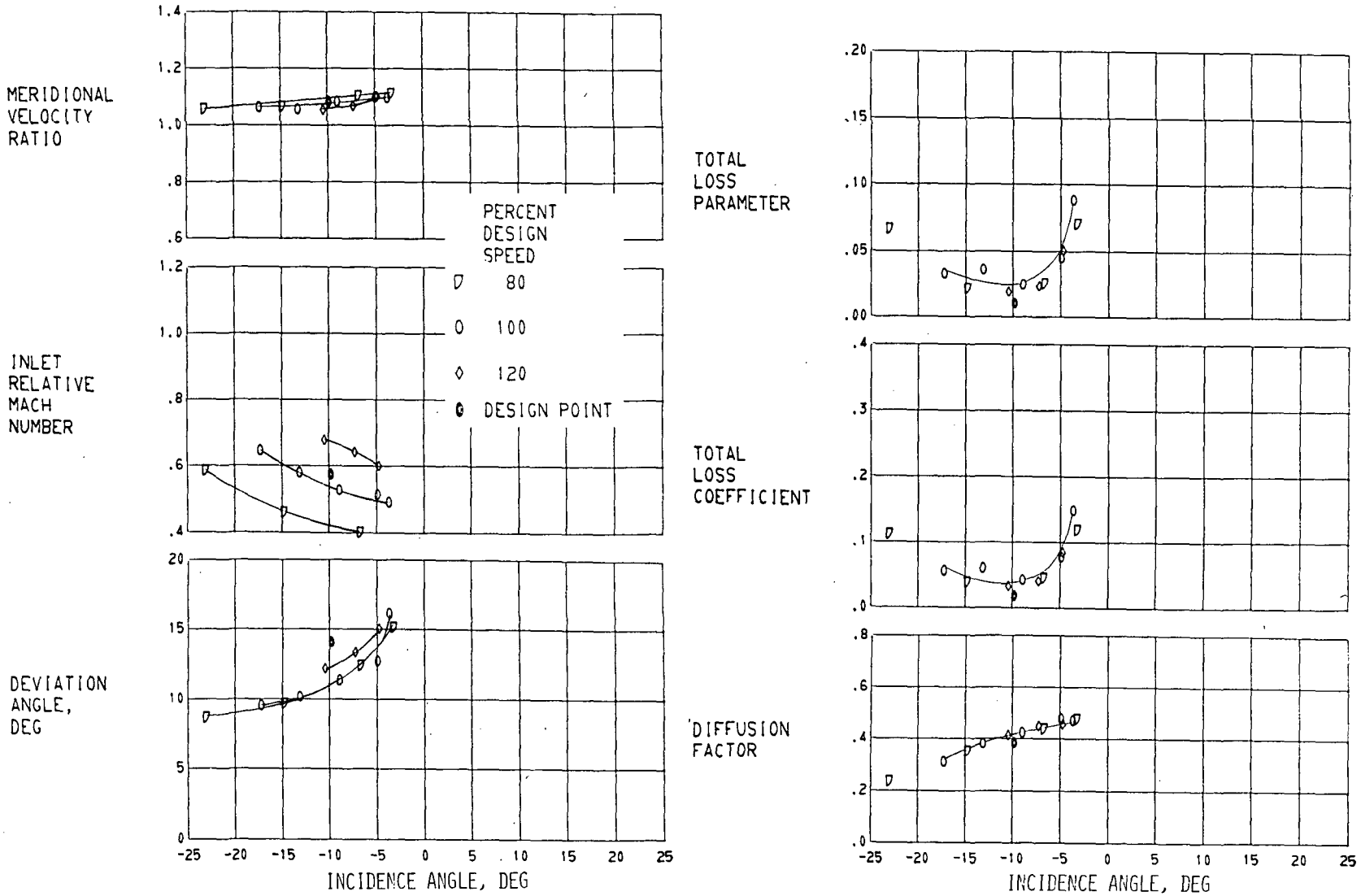
(A) 5.0 PERCENT SPAN.

FIGURE 12. - BLADE-ELEMENT PERFORMANCE FOR STATOR 55.



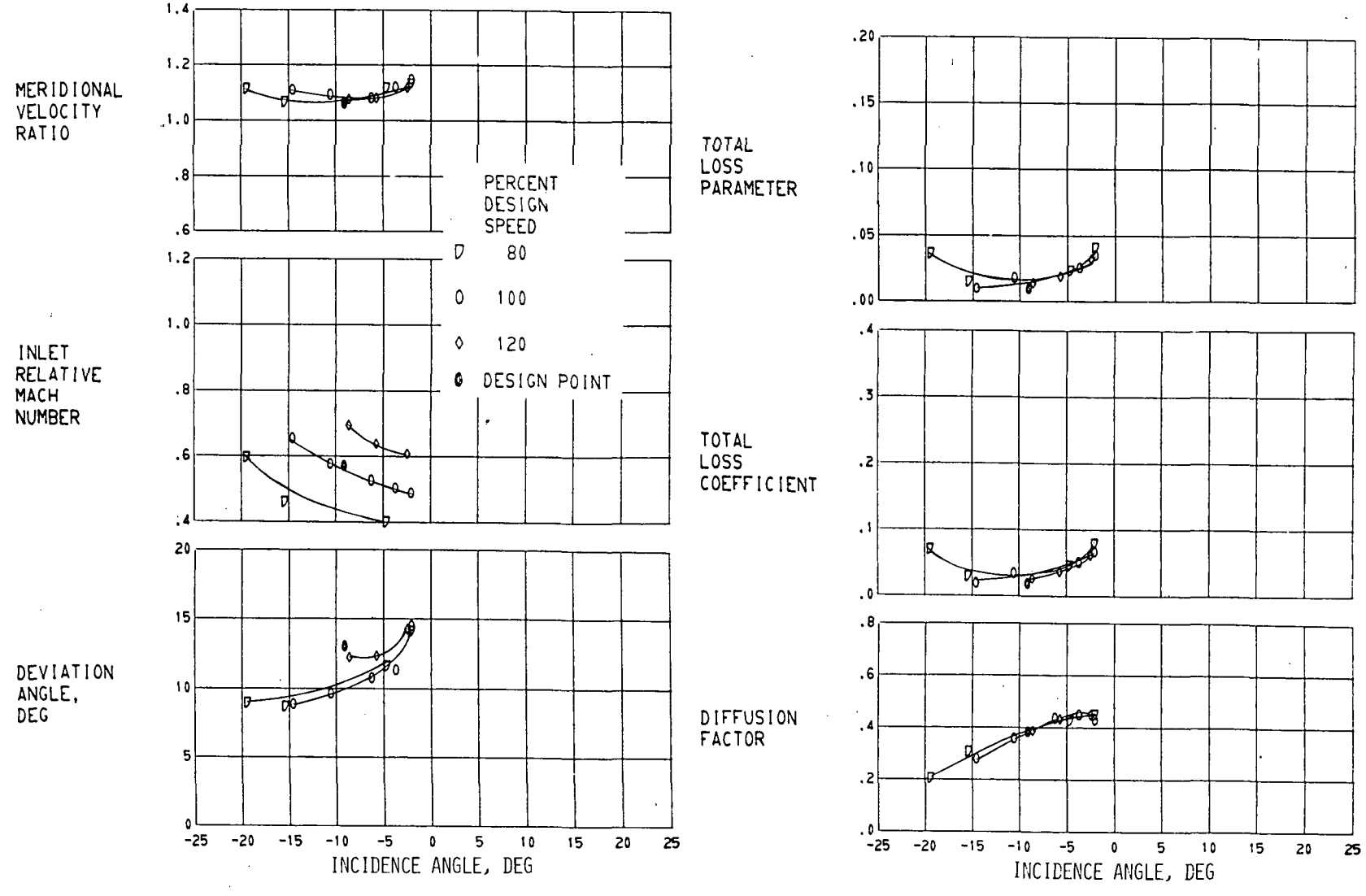
(B) 10.0 PERCENT SPAN.

FIGURE 12. - CONTINUED. BLADE-ELEMENT PERFORMANCE FOR STATOR 55.



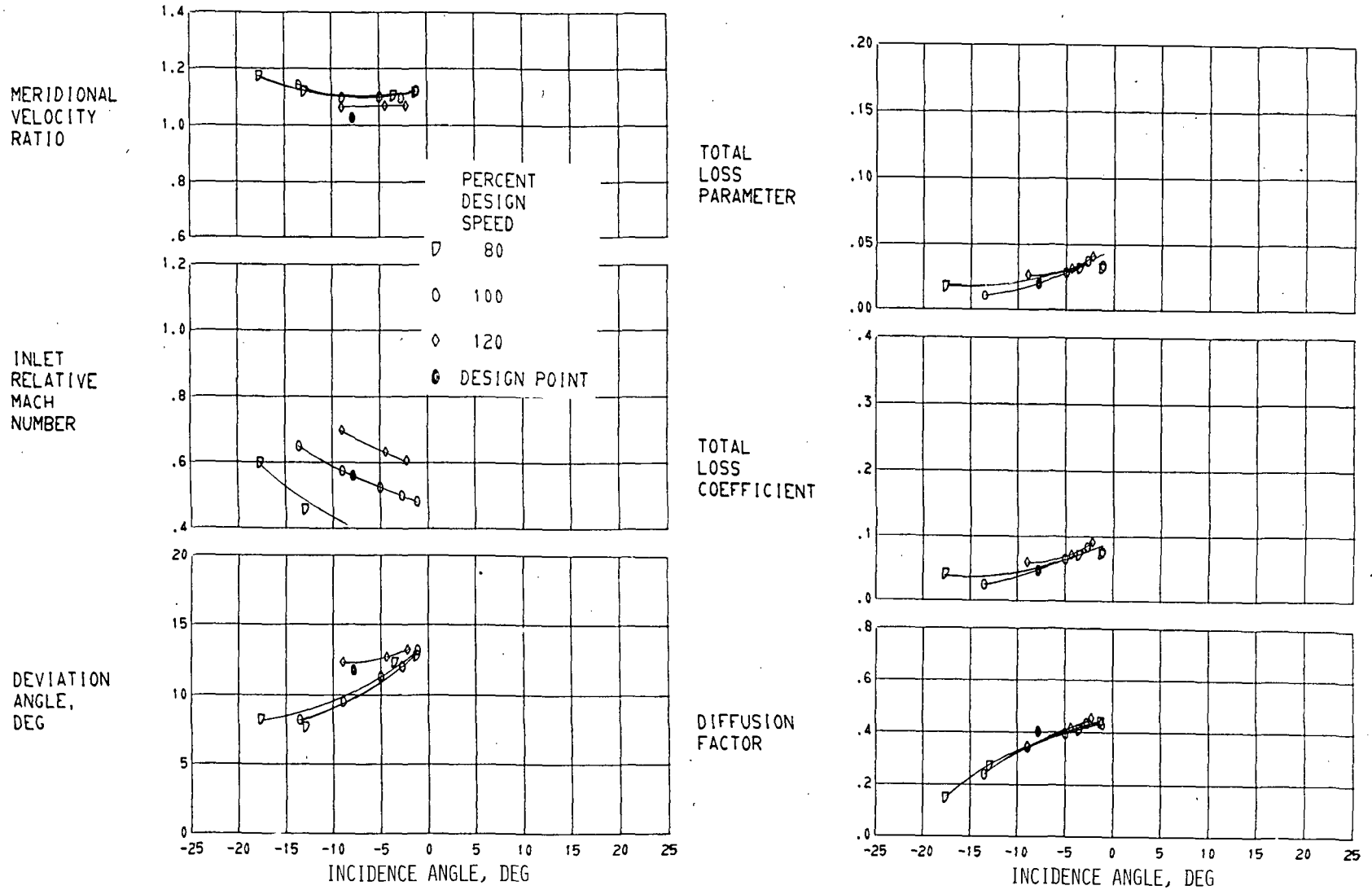
(C) 30.0 PERCENT SPAN.

FIGURE 12. - CONTINUED. BLADE-ELEMENT PERFORMANCE FOR STATOR 55.



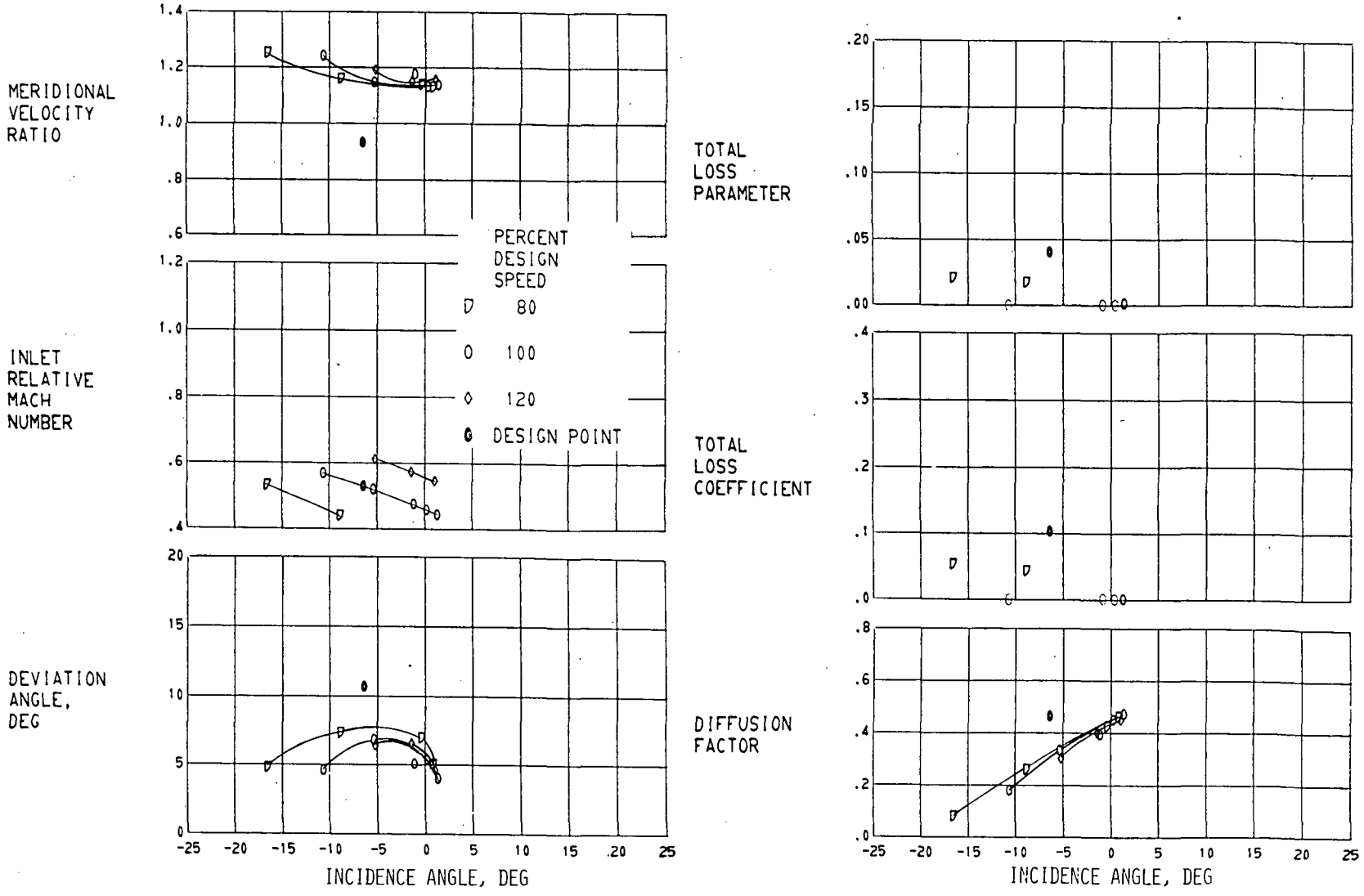
(D) 50.0 PERCENT SPAN.

FIGURE 12. - CONTINUED. BLADE-ELEMENT PERFORMANCE FOR STATOR 55.



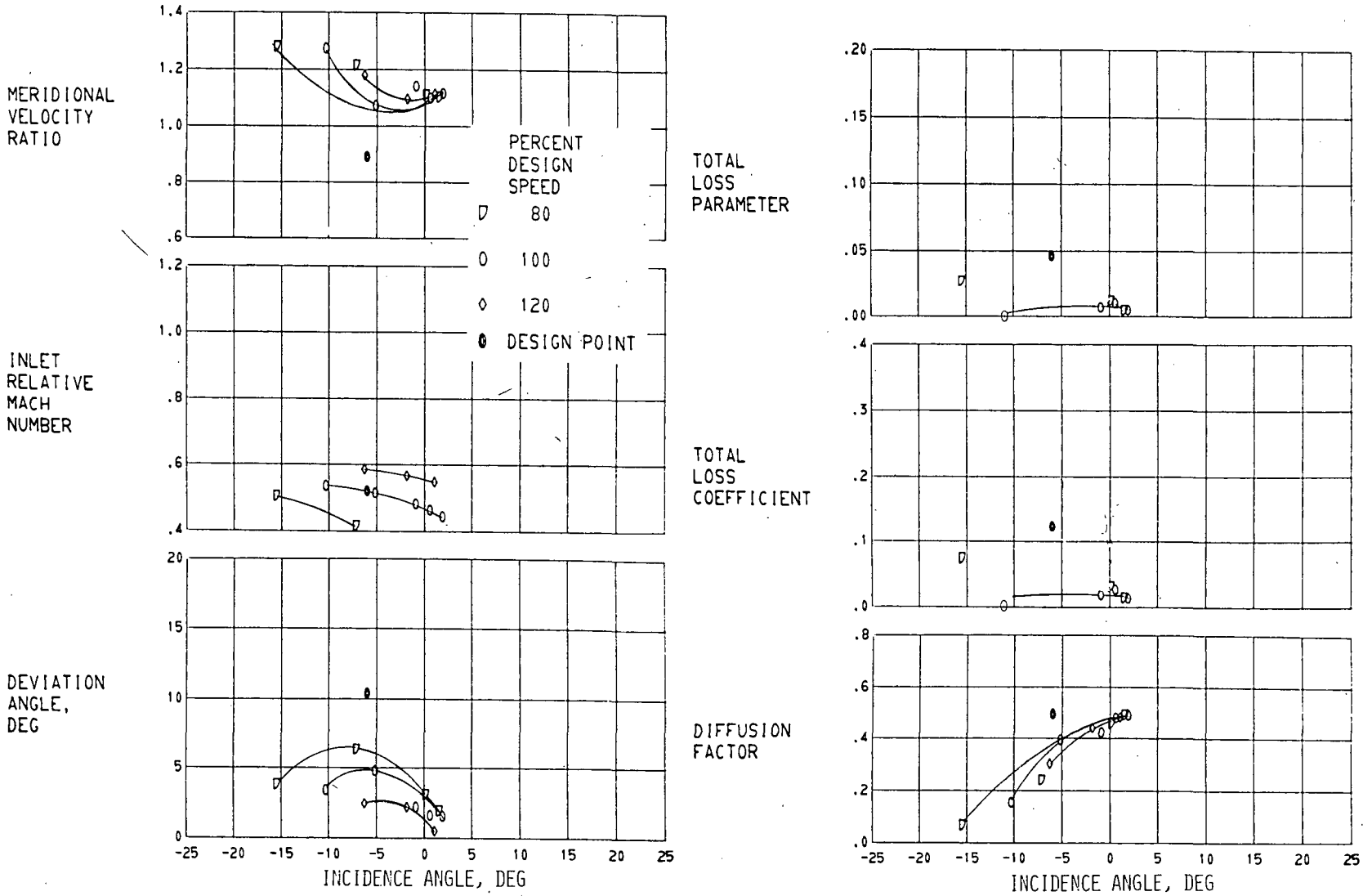
(E) 70.0 PERCENT SPAN.

FIGURE 12. - CONTINUED. BLADE-ELEMENT PERFORMANCE FOR STATOR 55.



(F) 90.0 PERCENT SPAN.

FIGURE 12. - CONTINUED. BLADE-ELEMENT PERFORMANCE FOR STATOR 55.



(G) 95.0 PERCENT SPAN.

FIGURE 12. - CONCLUDED. BLADE-ELEMENT PERFORMANCE FOR STATOR 55.

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